

The Iron Age

A Review of the Hardware and Metal Trades.

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THE SONG OF THE BELL.*

BY FREIDERICH VON SCHILLER.

Translated for *The Iron Age* by Prof. Wm. L. Faber.

In the pit, built firm and steady,
Stands the mold of seasoned clay :
All to cast the Bell is ready,
Craftsmen, be on hand to-day !
Streaming from the brow
Honest sweat must flow,
Then success attends us ever,
Heaven blessing our endeavor.

In any earnest undertaking,
The frame of mind should suit the deed ;
So now, all levity forsaking,
Let cheerful words our labor speed.
Then let us view, with searching spirit,
What our slight powers may produce :
That man contempt alone can merit
Who studies not his labor's use.
For man this privilege possesses :
Endowed with faculty of thought,
He may, within his heart's recesses,
Feel all the good his hand has wrought.

Now, bring on the pine wood fuel—
Bring the driest and the best !
That the flame into the flue well
O'er the metal bath be pressed.
Boil the copper's stew !
Quick, the tin bring, too,
That the tough metallic mire
May alloy as we desire.

What in the pit our labor's power
Constructs with fire's aid, on high,
Within the belfry on the tower,
Aloud will we testify.
'T will thrill the ear of many people ;
'T will long withstand the tooth of time ;
In joy, in sadness, from the steeple
'T will with the pious chorus chime.
Whatever lot the alternating
Decree of fate on man bestows,
The metal crown, reverberating,
Proclaims abroad with mighty thunders.

Blisters now appear to settle,
And the fusion is complete.
Throw some potash on the metal,
Thus to regulate the heat !
And from dross quite free
Must the mixture be,
That from pure metallic tissue
Clear and full the tone may issue.

She greets, with joyous, festive pealing,
The loving parents' sacred deed,
When for the slumbering infant sealing
The vow to reverence the creed.
His future bright and dark lots, varied,
As yet within time's lap are buried ;
Maternal love's sweet, tender powers
Overwatch life's golden morning hours :
The years fly past with arrow-speed !
The boy forsakes his playmate, burning
Throughout the world at large to roam ;
Till later years find him returning,
A stranger, to his childhood's home.
And beautiful, in youthful splendor,
Like some fair shape from heav'n on high,
Her cheek suffused with blushes tender,
The maiden stands before his eye.
There seizes her a nameless longing
His youthful heart ; alone he strays ;
Into his eyes the tears come thronging ;
He sees his comrades' boisterous ways ;
He follows blushingly her shadow ;
Her smile is rapture heaven-born !
The fairest flowers of the meadow
He calls, his dear one to adorn.
O tender yearning, hope immortal,
When first love's golden vision glows !
The eye sees open heaven's portal ;
The heart in endless bliss o'erflows.
O, were but youthful love eternal !
That happy time forever vernal !

Brownish slags the metal cover.
I shall now this rod dip in ;
When we see it well glazed over,
Then the casting may begin.
Now I think it best.

The alloy to test :

For the whole metallic mixture

Should be uniform in texture.

When the ductile, tender metal
Mixes with the hard and brittle,
Then the tone is pure and strong.
Prove, then, before you marry, whether
Heart and heart suit well together ;
The dream's short, the sorrow long !
Sweetly rests the orange flower
On the snowy bridal veil,
While the merry bells the hour
For the wedding gladly hail.
But alas ! life's sweetest hours
Also end life's glorious May :
With the bridal wreath and flowers
Fades the beauteous dream away.
Though passion ne'er stays,
Yet love is enduring :
The blossom decays
When fruit is maturing.
The man must be out,
With hostile life striving ;

* Entered according to act of Congress in the year
1875, by David Williams, in the office of the Librarian of
Congress, at Washington.

Be toiling and driving ;
Be planting and reaping,
Amusing and keeping ;
Be planning, maturing,
And fortune securing. [ing,
Then comes in the bountiful harvest the bless-
Filling both garner and barn ; even pressing
Outward the walls ; and the house is enlarged.
And indoors governs
Domestic the housewife ;
The provident mother,
The family circle
Prudently ruling,
Her little ones schooling,
Restraining the boys,
And training the girls,
And stirring unceasing,
And always decreasing,
With ordering sense,
The household expense. [treasure,
She fills up the sweet-scented presses with
And whirls 'round the spindle the flax without
measure,
And stores in her closets full many a spool
Of beautiful flax and of bright, shining wool,

That means fire !
Bloody,
Ruddy
Glow is spread
Overhead :
As in fusion
Seems the cloud,
Lighting up night's sable shroud !
What confusion
Up the street !
Steaming heat
Darting, spreads the fire-sheet.
O'er the town it gains dominion,
Flying with the storm-wind's pinion.
Red hot, as a furnace blast,
Glow the air ; beams fall fast ;
Posts are crashing, windows creaking ;
Children straying, mothers seeking ;
Beasts are crying,
Mangled, dying ;
All are running, fleeing, frightened :
Into day the night has brightened !
Up the line, each other chasing,
As if racing,
Fly the buckets ; curving, bowing,

But man deposits in the bosom
Of earth a seed more precious still ;
And fondly hopes that it may blossom
Above, exempt from earthly ill.
From the dome,
With heavy swell,
Tolls the bell
A funeral knell.
Solemnly its mourning tones are beating,
A wand'rer on the last, long journey greeting.
Alas ! it is the wife, the loved one !
Alas ! it is the faithful mother,
Whom the Prince of Night, ill-omened,
From the husband's arm hath summoned ;
From the children's group hath torn,
Whom she in her bloom had borne,
Whom she, with a mother's zest,
Growing saw upon her breast.
Alas ! this stroke at once will sever
The beautiful domestic band ;
Her gentle spirit now forever
Has fled, to dwell in shadow land !
No longer will the faithful mother
At the household board preside ;

Sacred love for Fatherland !
Busy hands, in ample number,
Cheerfully each other aid ;
Nature's forces, waked from slumber,
Are obeying servants made.
Each one in his proper station
Liberty's protection claims ;
Each is proud of his vocation,
And to excellence each aims.
Honor's won by gun and sabre ;
Honor's justly due to kings ;
But the dignity of labor
Still the greatest honor brings !
Peace divine !
Concord sweet !
Rest, remain
Smiling over our town !
Distant be the day of anguish
When a savage, hostile legion
Shall invade this peaceful valley !
When the welkin,
Blushing now in sunset glory,
Bright and fair,
May be glowing with the gory
Light of burning cities' glare !

Now that it has served its duty,
We proceed to break the mold ;
Heart and eye may then the beauty
Of the graceful bell behold.
Strike now, strike away !
Crack the shell of clay !
For the mold the bell releases
Only when it breaks in pieces.
With prudent hand, in season proper,
The master may destroy the shell ;
But woe, if e'er the boiling copper
Unbind, escape the prison cell !
Blind raging, and with horrid roaring,
Then madly bursts the metal forth,
As if the mouth of hell were pouring
Destruction o'er the smiling earth !
With crude force acting undirected,
No fair result can be expected ;
Where wise laws do not man restrain,
Prosperity can never reign.
Woe, when, within the city fated,
Rebellion's spark is fanned to flame !
The people, rage-intoxicated,
Release from law and order claim.
Then is the bell's fierce clangor blended
With fearful uproar's deafening noise ;
For sounds of peace alone intended,
The harsher roars her brazen voice.
Disorder's din is rising, swelling,
The quiet tradesman flies to arms ;
The maddened mob, in street and dwelling,
The city fills with dread alarms.
Then women, to hyenas turning,
Familiarly with horrors play,
Tear the yet beating heart, with burning
Fury, within their hapless prey.
There's nothing sacred, nothing shielded
From violent and lawless hands ;
The good has to the evil yielded,
And ev'ry vice unfettered stands.
There's danger in the lion's frowning ;
'Tis death to cross the tiger's path ;
But still, all other horrors crowning,
Is man, when blind with raging wrath !
Woe, when the gleam of Reason's torches
Is shown to the unthinking throng !
Enlightening not, it only scorches,
And leads to vice and fearful wrong.

Joy to us of God is given !
Bright, as solid golden ore,
Now the mold's asunder riven,
Sparkles the metallic core.
God our work has blest !

Body, rim and crest,
And the ornamental border,
All appear, in perfect order.

Come in, come in !
Ye craftsmen, all join in the glee !
The bell shall now be dedicated ;
CONCORDIA her name shall be !
To peace and unity in adoration
May she collect the faithful congregation !

And this her mission be henceforth,
For which the fire gave her birth :
To her the destiny is given,

High over ev'ry earthly thing,
Within the vaulted blue of heaven,
A neighbor to the stars, to swing !
Her voice shall, in the upper regions,
Keep true account of works and days,
And mingle with the starry legions

In sounding the Creator's praise.
With subjects earnest and eternal,
Alone, her metal tongue shall chime ;
And hourly, in the course diurnal,
Her stroke shall note the flight of time.
Herself devoid of heart or feeling,

And deaf alike to love and hate,
She yet, in joy or sorrow pealing,
Shall sympathize with human fate.
And as her powerful vibrations

Upon the breeze soon die away,
So may she teach that men, and nations,
And earthly matters all, decay.

Now, with block and tackle's power
Raise the bell from out the ground !
Let her, on her distant tower,
Mount into the realm of sound !
Ring now ! Let her swing !
Rising, let her ring !

Joy to our town revealing,
Peace proclaims her primal pealing.



And adds to the useful the dainty and pleasing,
Her work never ceasing.
And the father, in joyful tone,
From the house's far-seeing gable,
Counts his possessions one by one :
Shows the fences, broad acres dividing ;
Roomy barns, rich farm produce hiding ;
Shows the fields, new plant-life urging ;
Shows the golden grain-wave surging.
Proudly he dares to boast :
" Firm as the starry host,
Are my possessions sure,
'Gainst adverse fate secure !"
But, with Fate's almighty powers
No eternal bond is ours ;
And Misfortune strides apace.

Is the fracture tough and wiry ?
Good ! For casting now prepare.
But, before we run the fiery
Mass, unite in solemn prayer !
Strike away the tap !
God avert mishap !
Bright, in greenish splendor glowing,
Comes the liquid metal flowing.

A precious boon to man is flame,
When kept by him subjected, tame.
This mighty power of heav'nly birth
Aids him in every work on earth ;
But fearful is this power of heaven,
When, once her bonds asunder riven,
Her own pathway she pursues,
Scourging nature in her cruise !
Woe, when freed, and onward sweeping,
Flourishing her savage brands,
Through the crowded streets she's leaping !
Naught the element withstands ;
Ever in abhorrence keeping
Every work of human hands.

From the clouds,
Showers shedding,
Blessings spreading,
From the clouds, at random, rash,
Darts the flash.
Hear the clangor from the spire

Engines are their billows throwing.
Howling comes the storm, and lowing,
Spreading still the fiery rain.
Rattling in the seasoned grain,
Now it seizes barn and stable,
Mounting up the wooden gable ;
And Destruction, madly driven,
Overwhelming, rushes forth,
Swallows up the wealth of earth,
Paints upon the dome of heaven
Fearful glare.

In despair
Man to God's decree surrenders.
Powerless he stands, and wonders :
Sees his property consumed.

Burnt to ruins
Is the homestead.
Bet and owl
Darkly through the windows scowl ;
Storms there howl ;
Freely there now snow and rain
Access gain.

One look more
Yet bestowing
On the glowing
Ashes of his earthly store,
He accepts his fate, still knowing
There is comfort yet to cheer him,
Though his property is gone ;
For he counts his dear ones near him,
And, behold ! he misses none.

Now the work may be regarded
Done, for well the mold did fill.
Will our efforts be rewarded ?
Will success attend our skill ?

What, if chilled too fast,
Bad appear the cast !
Ah ! misfortune may be near us,
While the fairest hopes yet cheer us !

To our mother Earth confiding
Our work, we wait awhile.
To the earth entrusts his grain
Thus the sower, still abiding
Heaven's blessings, sun and rain.

Unloving, there will sit another
At the orphaned hearth.

Each one now may be at leisure ;
While the bell is cooling, rest !
Each one may pursue his pleasure
As his taste may deem it best.
With the vesper's chime
Comes refreshment time,
Rest to weary craftsmen sending —
Masters' work is never ending.

Cheerily the weary wandle,
In the wilds of tangled forests,
Mends his pace at sunset hour.
Thew the sheep come, frisking, bleating,
And the cattle

Come with brows so broad and patient,
Calmly lowing,
To the wonted stables going.
Heaped with grain
Rolls the wagon,
Heavy laden ;

Wheat-sheaves lining,
Gaily shining,
Lies the wreath ;
To the dance the reapers hurry
On the beat.

Quet reigns in street and market ;
Round the taper's cheerful glimmer
Now collect the house's inmates,
And the town-gate closes, grating.

Darkness covers
All the city ;
But the citizen in quiet
Hails the night,

Rests secure from mob and riot
Guarded safe by law and right.
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Child of Heaven, ever sowing
Seeds of peace in happy hour !

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Tore away the heathen banners,
Taught the people gentle manners,
Wove the noblest human band ;

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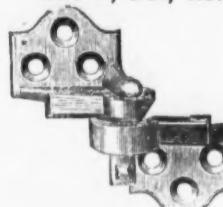
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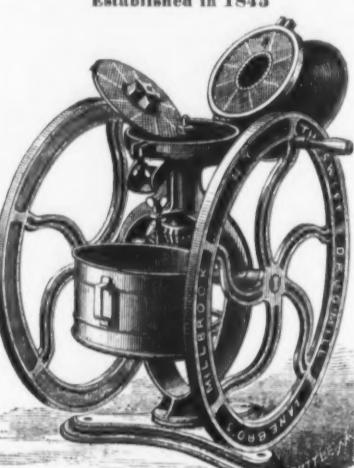


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Patented, Dec. 31, 1861.
Released May 1868

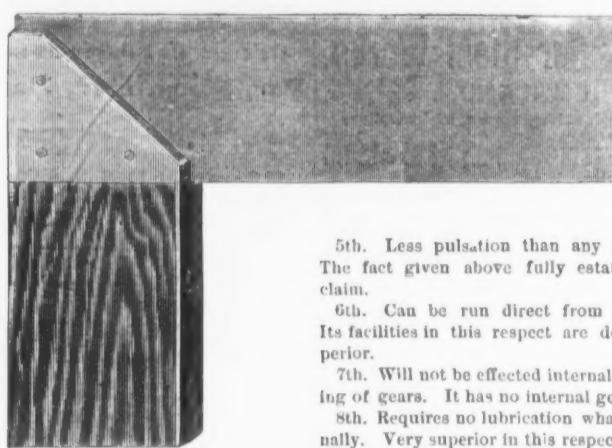
Winterbottom's Patent Combined Try and Mitre Square.

An ingenious combination of the ordinary try square and a mitre square, in one tool, is represented in the accompanying engraving. A single glance at the construction of this improved tool will show how its use as a mitre square is equally convenient and accurate with its use as a common try square. Nothing is required of the workmen, except a change of position of the handle, by which the mitred face at the top of the handle will be brought against one edge of the work in hand, and a perfect mitre, or angle of forty-five degrees, may then be struck from either edge of the blade. A more convenient tool for all woodworkers can hardly be found. Mechanics of this class have almost constant occasion to

indicated by the gauge was 11½ on the average, standing part of the time at 12 oz., and sometimes falling as low as 10 oz., the pulsation, as before, being so great as to make the needle invisible; the power consumed being 843 horse-power.

Your committee also carefully examined each machine relative to the points as claimed by the Baker machine, a copy of which is here-with submitted, and have decided as follows, on each claim separately:

- 1st. Strength. We see no difference.
- 2d. Durability. We feel justified in saying that the Baker machine is so constructed that time will prove it eminently entitled to first place on this claim.
- 3d. Fewness of parts. Allowed.
- 4th. Ease of motion. This is proved by the amount of power consumed.



5th. Less pulsation than any of its class. The fact given above fully establishes this claim.

6th. Can be run direct from an engine. Its facilities in this respect are decidedly superior.

7th. Will not be effected internally by wearing of gears. It has no internal gears.

8th. Requires no lubrication whatever internally. Very superior in this respect.

9th. It requires no dubbing to make it temporary tight. Very superior in this respect.

10th. Will exhaust, as well as blow. We did not test this.

11th. Dust will not injure it. It certainly cannot.

12th. Dampness will not change its form. It certainly cannot, as it is constructed of iron and steel exclusively.

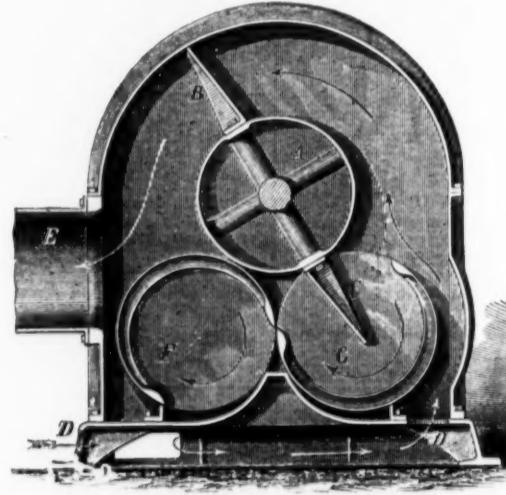
13th. It runs steady without jerking the belts. We had no means of deciding on this claim.

14th. Will blow hot or cold air equally well. Allowed; we believe this to be a very important point.

15th. It requires less power for the amount of air discharged. This is proved by the indicator cards.

16th. Its entire absence of friction internally. This claim is very decidedly sustained, while the Root Blower has, and it must be very considerable in the latter. Your committee are therefore of the opinion that the Baker Machine has proved itself the best in every respect, and entitled to the first premium and diploma.

Improvements in Telegraphy.—The tendency of improvements in telegraphy, as shown by the current business of the Patent Office, is toward cheapness and rapidity of transmitting messages. At a recent trial of an instrument which quadruples the capacity of each wire, 302 business messages, averaging ten words each, were transmitted in ninety



THE BAKER ROTARY PRESSURE BLOWER.

180 revolutions per minute, and in order to make both machines equal in discharging through holes of equal size, it was found necessary to speed the Baker Machine up to 202 revolutions per minute, at which speed the latter machine indicated 20 oz. average on the pressure gauge, the variations being from 19 to 21 oz., and the pulsation being 6 oz.; at a speed of 180 revolutions per minute, the machine indicated 18 oz., very steady, the variations being not more than $\frac{1}{2}$ oz. in either direction, while the pulsation was about 5 oz. The Root Blower, at a speed of 180 revolutions per minute, indicated an average of 17 oz. pressure on the gauge, and at no time reached above 18 oz., while sometimes falling as low as 15 oz. The pulsation was so great that the needle of the instrument became invisible from the rapidity of its movement. The speed of the machine was found to be uniform during the entire test. We then tested both machines, run by the same engine, three indicator cards being taken during the test in each case, which was continued for ten minutes, with the following results: The Baker Machine was run from 3:05 o'clock to 3:15 o'clock; the counter registered during the test, 1517 revolutions; the pressure gauge indicated 12 oz., very steady, and the pulsation 5 oz., the average power consumed being 843 horse-power.

The Root machine was run from 4:05 o'clock until 4:15 o'clock, making, in that time, 1500 revolutions by the counter. The blast pressure

minutes, over a single wire, four operators working at each end thereof. The old instruments sent from sixty to eighty words per minute. Telegraphy is largely used for the protection of railroad trains, and has lately been applied to a system of "block signalling," whereby a train rises and lowers signals both in front and behind it. These signals are placed one mile apart, as a warning to the engineers of other trains that they must not enter the section of road on which another is traveling until the first one has passed into another section.

Statistical tables show that there are in the whole world about one hundred and sixty-four cities with 100,000 inhabitants; nine with over a million; twelve with from a million down to 500,000; twenty with from 300,000 to 400,000; thirty-three with from 200,000 to 300,000; and ninety with from 100,000 to 200,000. The aggregate of the population of these large cities comprises fifty millions of inhabitants, that is to say, the twenty-eighth part of the entire population of the globe. The average population of a town is reckoned to be: For England, 47,770 inhabitants; for France, 32,251; for Prussia, 19,685; for Sweden, 5849. The density of population in reference to area is for Paris 329 inhabitants per hectare (about two acres and a half); for London, 103; for Berlin, 59. This density varies considerably from one district to another; it is generally the highest in the poor or manufacturing districts. Next to these figures come those which represent the average density in regard to dwelling places. It is in St. Petersburg 52 inhabitants for each house; in Vienna, 494; in Paris, 32; in Berlin, 32; in London, 8.

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3d. They are perfectly adjustable and have a certain draft.

4th. They will scour in all kinds of soil.

5th. They are the cheapest plow used.

6th. They are the only chilled plow made.

Our first point is secured by the share and mold-board forming one continuous curve, thus compelling the soil to follow the curve, and so, in plowing, it is easy and natural and almost weightless; no effort is required, while our chilled iron possesses a peculiar smoothness and solidity throughout, far ahead of any other metal used in plows.

Our second point needs no explanation from us, as chilled iron is conceded by all to be the hardest and most durable metal used for this purpose.

It is harder than steel, and will not scratch nor corrode.

Our third point is secured by a movable beam placed over the center of the work, which can be so nicely adjusted by moving to the right or left, that the plow will run without handling. With these plows the most uninteresting portion of farm labor becomes a pleasure and a pastime.

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Our sixth claim we will not discuss here, but should it be disputed by any one, we shall be happy to convince the most skeptical of its truthfulness. Call on us for the proof at any time, and we pledge our words they shall be produced.

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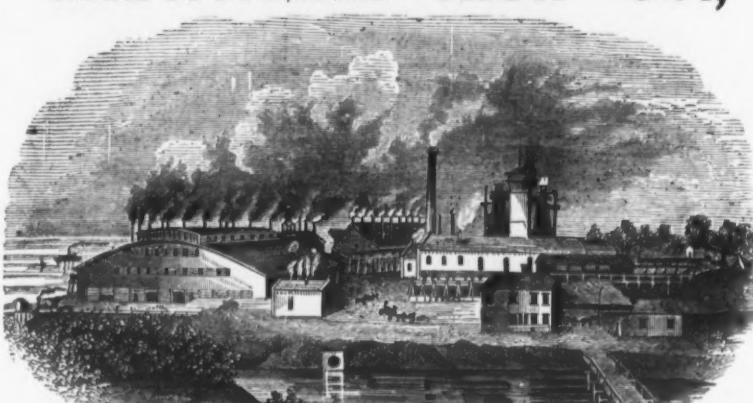
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The Oldest and Most Extensive Manufacturers of

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Hydraulic Machines

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Manufacturers of all styles Plain and Ornamental Butts,

LOOSE PIN REVERSIBLE,
Cast Fast & Loose,

Drilled and Wire Jointed.

Japanned, Figured Enamelled, Nickel Plated,

and Real Bronze Butts. A. S. & Son's line of

IRON & BRASS PUMPS,

Cistern, Well, and Force Pumps, Yard, Drive

Well, Garden Engine, and Steam Boiler Pumps,

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Solid Cast Steel Pump Auger

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Double Acting,
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FLUTING MACHINES,
Stand Sad Irons, Polishing Irons,
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Chain and Pulley for Heavy Sash.

Manufacturers of every description of

BUILDERS' HARDWARE.

Pure Bronzed Metal and Hand-Plated Knobs, Hinges, &c.,

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BLAKE'S

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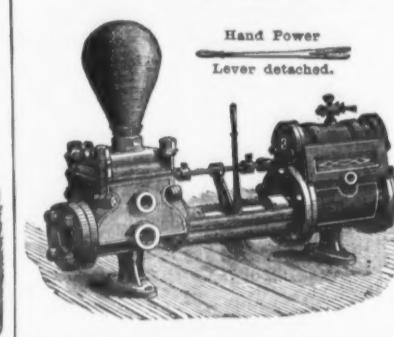
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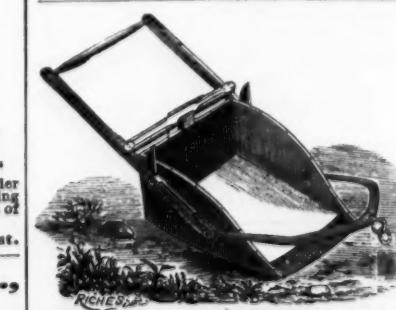
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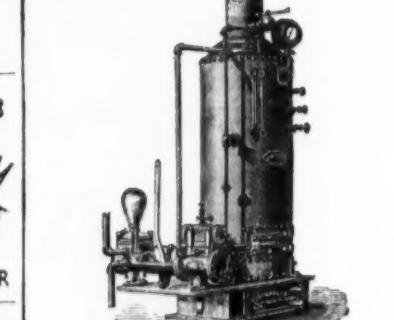
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MANUFACTURED 3425 MARKET ST PHILA.
CIRCULAR



REVOLVING SCRAPER COMPANY,
Columbus, O.
Manufacturers of Davy's Revolving Road Scrapers,
Mammoth Road Plows, and R. R. &
Canal Barrows, with Pat. Wheels.
Send for Circular and Price List.



Cut above represents Pump and Boiler com-
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Water Stations, Hotels, Factories, &c.

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Geo. F. Blake Mfg. Co.,

79 & 81 Liberty St.,

NEW YORK.

Cor. Causeway & Friend Sts., Boston.

50 & 52 S. Canal St., Chicago.

The Union Iron Works, near Baltimore.

From a description of these works in the Baltimore *Trade Review* we take the following:

The foundry is 160 feet in length by 160 in width; it is thoroughly warmed, and most effectually lighted by innumerable large windows upon all sides, extending from the ceiling to the ground, thereby adding to the comfort and facilitating the workmen in their mechanical operations. In this department is a gear molding machine, by which a gear wheel can be made without the expensive form or pattern heretofore requisite for that purpose. At this time the Messrs. Poole & Hunt are manufacturing eight of these gear machines for a firm in New York, and two of them for the Allegheny Works, in Pennsylvania. In this foundry are three powerful cranes of 20 tons power, three cupolas of a capacity of 50 tons per diem, a cabinet for patterns of pulleys, improved machinery for making pulleys, the manufacture of pulleys being a specialty of this great industry. The pattern shop is 68 by 40 feet; in it is every variety of improved machinery—circular saws for cutting bevels, a band saw of French manufacture, also cross cut and rip saws. In the melting house is a large hydraulic pump, utilized in heavy lifting, and for elevating the stock to the melting furnaces. Next is the brass foundry. In this foundry can be seen the large conical shot, weighing 180 pounds, being cast for the government, and to which are being adjusted the brass sabot, or brass caps, an invention of a gentleman in Washington. The machine shop is 430 feet long and 60 feet wide. In it are 24 turning lathes; eight planers, one of them 12 feet broad and 50 feet long—one of the largest in the country; two boring mills—one will take up to 5 feet, the other to 12 feet; ten drill presses; two bolt cutters; two pipe cutting machines; and special machinery for all and every purpose; one slotting machine; seven large cranes, and water wheel machinery. In the center is a turn table, placed at the point where the railroad tracks intersect, the one coming into the shop to bring material, the other leading from the shop, both connecting with the Northern Central Railroad. At the point where the incurrent connecting track enters the premises is the large scales, upon which everything is weighed that may be intended for the establishment. In entering this machine shop, one is impressed with the grandeur and effect of a vast industrial hall, for it is replete with the most elaborately improved and effective machinery that the experience and ingenuity of a quarter of a century could procure or devise. In this long line of machinery the eye constantly falls upon evidences of the most successful adaptation of means to ends for securing the greatest economies of labor, as well as the greatest perfection in the details of the endless machinery. In the second story of this vast machine shop is the pattern storage loft, 430 by 60 feet, the counterpart of the story below in the system, order, variety and precise classification of the numberless patterns of every size, stored away for future reference in case of necessity. In the tool room is machinery for the manufacture of tools, and all tools are duplicated, and when taken out of this room to be used by the employes, must be returned or satisfactorily accounted for, or he is charged the value of the same. In this room are deposited all the templets, the pattern or form by which every piece of machinery can be made, thereby economizing time and labor, with the advantage of accuracy and interchangeability. Here is preserved, always ready for reference, the serial measurements or the Whitworth gauge; in close proximity are the grinding room, paint shop, rigging room and wash room, furnished with hot and cold water, where all the employes, after work, conveniently wash; a blacksmith shop, in which is a large steam hammer and furnaces capable of yielding ten tons of iron per diem; two blowers to furnish air for the cupolas, and a hydraulic pump, a millwright and carpenter shop. In the yard is a punching and shearing machine, a gasometer, and a few yards distant from the factory buildings is a lake which supplies the factory and town of Woodberry with water. The machinery of the entire factory, and all its appurtenances, is driven by an engine of 65 horse-power. Throughout the entire establishment, in all of its departments, will be found the most approved machinery, tools and all appliances necessary for the production of machinery and castings of the largest and heaviest character, of the best quality, both as regards material and workmanship.

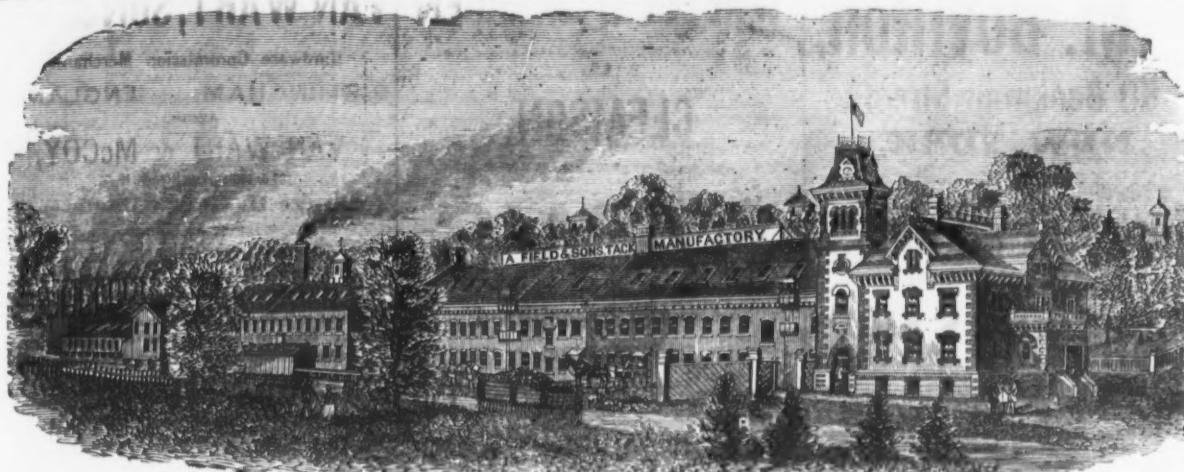
The working force of the workshops is about 350 hands, and the pleasant surroundings and considerate employers serve to evoke the interest of the employes in the establishment, and to render them less desirous of change, establish contentment, and, therefore, make them more desirable and profitable to the employer. In this large establishment is constantly kept on hand an unusually large stock of miscellaneous machinery patterns, including an extensive new set of pulley, hanger and box patterns, unsurpassed anywhere, and it can present to the manufacturing public a comprehensive list, which cannot be excelled, and seldom equalled.

A dispatch from Fall River, Mass., under date of Jan. 31st, says: "The trouble in the cotton mills of this city probably reached a culmination yesterday, and a disastrous and general strike seems inevitable. A conference of the manufacturers, at which delegation of the disaffected weavers were present, was held this evening, and, after a lengthy discussion, a proposition was agreed upon virtually giving back to the operatives one-third of the 10 per cent. reduction. A meeting of the weavers of the Merchants', Granite and Crescent mills was immediately held, and it was unanimously voted to refuse anything short of a restoration of their full pay. The two weeks' notice of the weavers in the two last named mills is up to-night, and of the Merchants' on Monday night. The operatives are, therefore, on a strike, which must cause the stoppage of these three mills. Much excitement exists over the matter."

February 4, 1875.

THE IRON AGE.

9



A. FIELD & SONS, TAUNTON, MASS., Manufacturers of Copper and Iron Tacks, Tinned Tacks,

SUPERIOR SWEDES IRON TACKS, for Upholsterers' Use, Saddlers' Supply, Card Clothing, etc., etc.

American and Swedes Iron Shoe Nails,

Zinc and steel Shoe Nails, Carpet, Brush and Cimp Tacks, Common and Patent Brads, Finishing Nails

Annealed Trunk and Clout Nails, Hob and Hungarian Nails,

Copper and Iron Boat Nails, Patent Copper Plated Tacks and Nails

Fine Two Penny and Three Penny Nails, Channel, Cigar Box and Chair Nails, Leathered Carpet Tacks,
Glaziers' Points, etc., etc.

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WAREHOUSE AT 35 CHAMBERS STREET, NEW YORK, where may be found a full assortment of Tacks, Brads, &c. for

the accommodation of the New York Wholesale and Jobbing Trade.

Any variations from the regular size or shape of the above named goods made from samples, to order.

Hopkins & Dickinson Manufacturing Co., FINE METAL WORKERS,

69 Duane Street, N. Y.

Works, Darlington, N. J.

Hand Made Locks and Real Bronze Hardware.

NEW AND ARTISTIC DESIGNS FOR

Private Residences, Banks, Churches and Public Buildings.

OTIS PASSENGER AND FREIGHT ELEVATORS

FOR HOTELS, OFFICE BUILDINGS, STORES,
WAREHOUSES, FACTORIES, MINES,
BLAST FURNACES, &c.OTIS BROTHERS & CO.
SOLE MANUFACTURERS,
348 Broadway, New York.**Empire Portable Forges**

NO BELTS, BELLOWS OR CRANKS.

The Best Made.

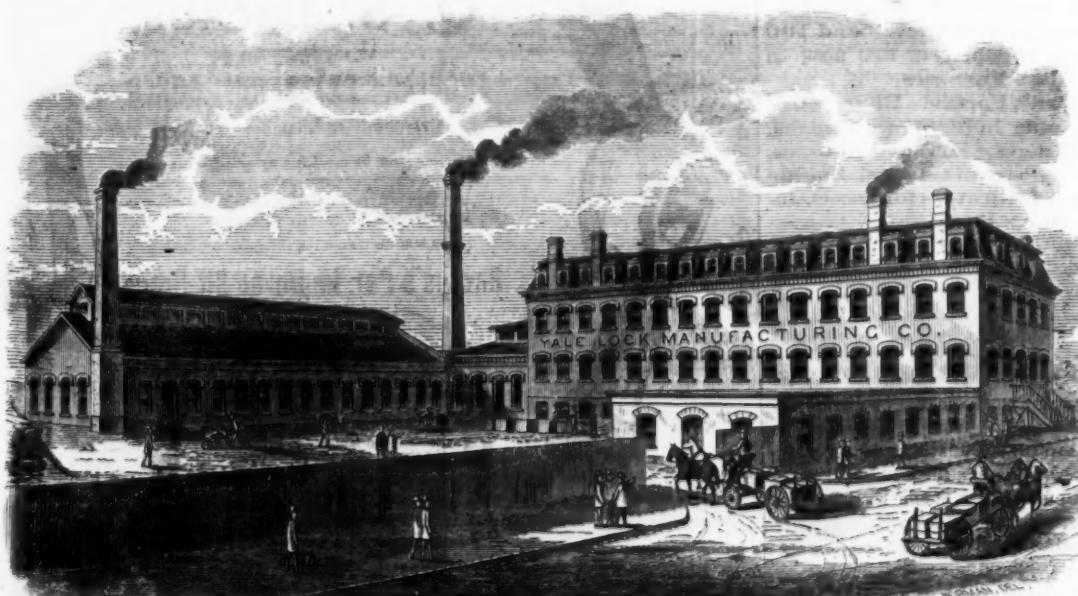
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CROCKER BROTHERS, 32 Cliff Street, N. Y. METALS.

Anthracite Pig Irons,
COLD AND WARM BLAST CHARCOAL IRONS,
American and English Bessemer Irons, Iron Ores.
COPPER, TIN, &c.

Advances made on Merchandise.

**WORKS OF THE YALE LOCK MFG. CO., STAMFORD, CONN.**

BUSINESS ITEMS.

CONNECTICUT.

The Yale Iron Works, at New Haven, has been purchased by Mr. Wm. B. Pardee, who will continue, under the old name of Yale Iron Works, to manufacture horizontal and vertical steam engines, either for land or marine purposes. Mr. Pardee holds the right of New England to apply the Rider variable cut-off to any engine. This cut-off is becoming very popular, not only for its economy in fuel, which is equal to any other cut-off, but for its great simplicity of construction and noiseless running. Mr. Pardee claims that in five or more years running it will cost less, all things considered, "such as fuel, repairs and engineer," than any other cut-off engine now before the public. He will make a specialty of the patented Yale vertical engine, which is now being used in all parts of the country with the best of results. They are made of the very best of material, and finished in the finest manner, each engine being thoroughly tested before leaving the shops. A five horse engine, with all the fixtures costs \$450, and other sizes up to 50 horse-power in like proportion. Notwithstanding the hard times, these shops have been running 10 hours a day since last July.

More than forty different styles of chairs are manufactured at the works of the New Haven Folding Chair Company, at New Haven. The factories are of brick, the main building being 120x32 feet, and five stories high, with an L 100x32 feet, of the same height. It is furnished with new machinery of the latest patterns, which is driven by a steam engine of 30 horsepower. The company employ, when running their works at full capacity, about 80 hands. Beside chairs, they manufacture folding settees, carriage wood work, &c., and give special attention to children's carriages, of which their product includes twenty varieties. One of these, the patent reversible, has gained a wide popularity. Their illustrated catalogue gives representations of the various styles of carriages, folding chairs, &c., manufactured by them. The company was organized in 1863. I. N. Dame is president and E. F. Mersick, treasurer.

Among the finest machinists' tools manufactured in the United States are those made by the New Haven Manufacturing Company, of New Haven. This company make a great variety of tools, such as lathes, planers and drills, of which they turn out large quantities, and for which they have established a high reputation. Their shops are well appointed, and fitted with new and improved machinery, which is driven by a steam engine of 60 horse-power. Their main buildings are of brick, 220 feet long, 45 feet wide, two stories in height, with an L 175x45 feet, two stories, with other buildings connected. Their works cover about three acres of ground. They give constant employment to 150 hands, and turn out a class of work second to none in the country. They have recently made very valuable improvements on some of their machinery, among which may be mentioned a planer 36 feet long 6 feet square, weighing 40 tons, with double heads and all the modern improvements; also a lathe with 40 feet bed. Their machinery is all manufactured under the personal supervision of Mr. Alex. Thayer, of the company, formerly of the firm of Thayer & Houghton, of Worcester, Mass. This is a stock company with a paid in capital of \$275,000, and have no liabilities.

The Crescent Steel Works, of Miller, Barr & Parkin, are located at Pittsburgh, on the Allegheny River, between Forty-ninth and Fifth streets. They were established in 1863 by the present firm, with the avowed intention of rivaling in the quality of their products the very best Sheffield steel makers. The methods of manufacture used in the famous Sheffield houses are exactly followed here, merit being claimed for careful and exact working, rather than for any quick or patent processes. In order to insure uniformity in stock the firm have their arrangements for their fine Swedish irons so made that they import direct from the makers, and have secured to themselves an entire brand of Dannemora iron, so that in certainty of supply and quality of stock they are not second to the best houses in England. The growth and reputation of the concern have been continuous. Established nine years ago with twelve melting holes, three hammers, and a capacity of three tons a day, they now have twenty-four melting holes, four Siemens furnaces, equal to ninety-six melting holes, capable of producing thirty tons a day; six steam barrems, and three trains of rolls. They are thus prepared to make twenty to thirty tons a day of all sizes and varieties of bar steel, and are making constant improvements in their appliances, to secure a beautiful and exact finish to their work. Not the least of these is the rapid adoption of gas furnaces for heating, making it very difficult for a careless workman to overheat his steel. For several years they have supplied regularly some of the best axe and edge tool makers in the country, many of the largest machine works, nail factories, screw cutters and others where steel has to do the hardest and finest work. They have driven the German rolls and English die steel out of the United States mint, so that American specie is now rolled and coined on American steel. We are informed that on account of the especial demand for their steel in Pennsylvania and the West, they had not solicited New England trade to any considerable extent prior to the panic. During the past eighteen months, however, through their Eastern agents, Messrs. Ely & Williams, No. 1232 Market street, Philadelphia, and No. 20 Platt street, New York, they have secured the patronage of many prominent steel consumers East, and their steel is now sold by dealers in the principal cities throughout New England and New York, who pronounce it in every way satisfactory. In conclusion, we must not for-

get to say that, in addition to Swedish iron, this firm use largely of the best American charcoal hammered irons, and are engaged in careful tests of new brands, some of which promise so well that they express a confident hope of soon putting into the market an exclusively American tool steel, which shall not be excelled by the combined product of Sweden and Sheffield. Being all young men, none of them yet forty years of age, they propose to continue their studies and practice, until such a thing as preference for English steel shall be no longer known.

Wrought Iron Bridge for the Pennsylvania Railroad Company over the Delaware River at Trenton.

The Pennsylvania Railroad Company have now in course of erection a wrought iron railroad and carriage bridge over the Delaware River at Trenton, designed to replace the present timber structure.

In 1803, Wernwag erected a wooden carriage bridge on this site, consisting of five spans, two of which were 203 feet each, one of 198 feet, one of 186 feet, and one of 161 feet in the clear. It consisted of timber arch ribs, from which the roadway was suspended by iron bar chains, the ribs being formed of eight courses of 4 by 13 inches each. The arches were braced vertically by timber struts, also laterally by braces connecting the different arches together for some distance each side of the crown, and the whole bridge was covered to protect it from the weather.

This was quite a celebrated bridge in its day, and an elevation of it may be seen in the *Nouveau Portefeuille de l'Ingenieur*, plate M-35-Fig. 19.

In 1848, the south side of the bridge was arranged for locomotive traffic, that part forming the present middle arch being increased in strength by four more ribs, making a total depth of 4 feet, and a new arch being erected on the south side, the bridge being kept still covered.

In 1869, the covering was taken off, and four new arches were put in on the railroad portion of the bridge, along side of the old arches, which latter were still kept in position. Renewals have been made from time to time of special timbers as necessity required it, but a large amount of timber, dating from 1803, still remains in the carriage portion of the bridge, and some in the railroad portion dating from 1848—strong evidence of the durability of timber if carefully selected and properly protected from the weather.

The design now being erected is a through bridge of three trusses, the north side being for carriage travel and the south side for two railroad tracks. It is constructed entirely of wrought iron except the piers and blocks under hinged bolsters, which are chilled castings, and the two ornamental cast fronts, the latter being merely thin castings fastened to wrought iron beneath, and not in any way contributing to the strength of the structure.

The trusses are constructed upon "Pettit's Stiffened Triangular System," with vertical and inclined members and horizontal upper and lower chords, being economical in design and at the same time after once being placed in position, requiring no future adjustment, as is necessary from time to time in all rectangular trusses of the ordinary type.

The trusses are the principal dimensions:

Number of spans	Length of spans center to center of end piers	Feet.
Two spans		308
One span		204
One span		192
One span		165
Number of trusses in each span		3
Distance center of north truss to center of middle truss		25
Distance center of middle truss to center of south truss		28
Distance center of north truss to center of railing on foot-walk		6
Height from center to center of chords		26

The foot-walk and carriage way are assumed to be covered with a moving load of 75 pounds per square foot of surface, and each railroad track is taken with a rolling load of one and one-half tons per foot linear (one ton of 2000 lbs.). The ultimate strain per square inch for tension was taken at 60,000 lbs., and for compression in short prisms at 36,000 lbs., a factor of safety of six being adopted for tension members and of four and one-half for compressive members. In addition to this, the floor beam system and certain light members of the truss were computed for a moving load of two tons per foot linear of each track.

The upper chord consists of channel bars connected at the top by rolled plates, and is varied in section according to the maximum strains in the different parts of its length. The posts consist of channels and I beams connected together and stiffened by plates, rivets, ferrules and diagonal bracing. Some of the posts near the ends of the spans are trussed.

The main carrying members are composed of links, six inches deep, and also in some places of links and rods in combination. Those in the panels next to the center of the span are stiffened by internal diagonal bracing, so as to resist compression under variable load.

The carrying members of the secondary truss are rods. The lower chords are composed of links, nine inches deep and all of varying widths. All links have upset heads and ends drilled for connecting pins. Horizontal lateral bracing is used throughout the structure in upper and lower chords, and diagonal bracing is introduced extending from the upper chord part way down the posts, allowing, however, sufficient clearance for the passage of locomotives.

Wrought iron connecting pins, four and a half to six inches, are used to connect all parts of the bridge together in both upper and lower chords. The cross girders of the railroad portion are of two channels trussed, and are placed at every panel and sub-panel. The track girders consist of two I beams under each rail, upon which are placed white oak cross ties and track stringers.

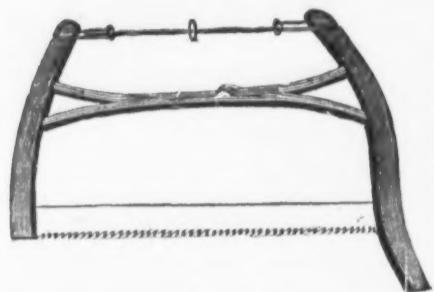
The carriage portion of the bridge has a timber flooring, and an ornamental timber screen is placed in the center truss between the carriage way and the railroad tracks. The bolster blocks and pier plates are the "Wilson" patent, wrought iron, having hinge connections with the trusses. The bridge has been designed and the plans prepared, and is now being erected under the direction of Joseph M. Wilson, engineer of bridges and buildings of the Pennsylvania Railroad. The manufacture and erection is being done by the Keystone Bridge Company.

GEORGE GUEUTAL & SON,
39 West 4th St., New York.
IMPORTER OF
Wood Screws, Steel in Sheets,
BAND SAWS, TOOLS FOR BRAZING, &c.
Bed Screws, Pin Hinges, and Wire Nails a Specialty.



H. W. PEACE,
MANUFACTURER OF
Saws of all kinds.

FACTORY, WILLIAMSBURGH, N. Y.



Elliptic Forked Saw Frame.
Patented June 28th, 1870.

The annexed engraving represents my ELLIPTIC FORKED SAW FRAME, which commends itself to the trade for its simplicity of construction. The Forked Brace being all in one piece, without any center bolt, secures for the Frame great strength and durability. These Frames are put up with my best Webs, marked "No. 40, Harvey W. Peace."

HARVEY W. PEACE,
Sole Proprietor & Manufacturer,
VULCAN SAW WORKS,
WILLIAMSBURGH, N. Y.

**THE SILVER STEEL
DIAMOND CROSS-CUT SAW.**

\$1.50 Per Foot.

Patent Secured

THIS new Saw, which is destined to take the place of all Cross-cut Saws in point of SPEED AND EASE, is manufactured by E. C. ATKINS & CO., Indianapolis, Ind., who are the SOLE MANUFACTURERS FOR THE UNITED STATES. So confident are we that this is the best Cross-cut Saw in the market that we CHALLENGE THE WORLD. Orders promptly filled. E. C. ATKINS & CO. Saw Manufacturers and Repairers, Indianapolis, Ind.



J. FLINT & CO.
Manufacturers of all kinds of SAWs and PLASTERING TROWELS.
ROCHESTER, N. Y.

Dietrich's Patent Wood Saw. Guarantees the strongest, lightest, easiest to strain or tighten and best braced wood saw made; also to give perfect satisfaction.

Dietrich's Patent Double Handle Rip Saw. All will readily see the benefit of this useful invention.

A. Flint's Patent Plastering Trowels. The best made and finished trowels in the world. We make four grades of Plastering Trowels, from the best to the cheapest.

Our patent method of grinding hand saws makes them superior to any in the market.

Send for Illustrated Price List.



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HARDWARE FACTORS.**

MANUFACTURERS OF:

Bonnev's Hollow

AUGERS.

Stearn's Hollow Augers
and Saw Vises

Bonnev's Spoke Trimmers

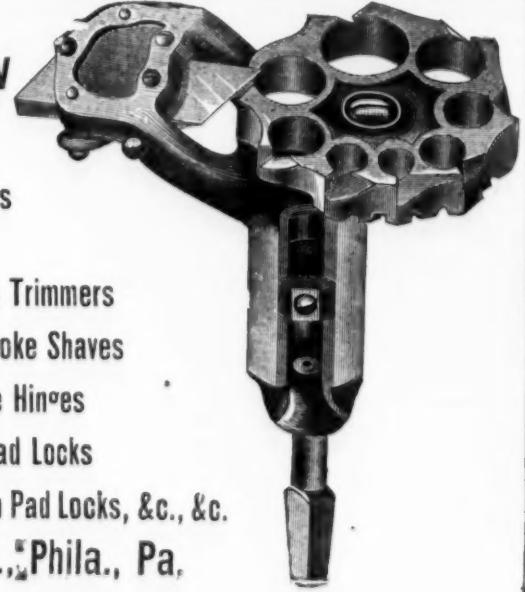
Double Edge Spoke Shaves

Adjustable Gate Hinges

Scandinavian Pad Locks

Flat Key Brass and Iron Pad Locks, &c., &c.

625 Market St., Phila., Pa.



E. M. Boynton,
80 Beekman Street,
NEW YORK,
Manufacturer of

Saws of all kinds.
Also Sole Manufacturer of
LIGHTNING SAWS.

Two Direct Cutting Edges, instead of one Scraping point.



Note extra steel and durability over the old V, outlined on M tooth.

TELEGRAM DATED Oct. 1st, 1874.

STATE FAIR, EASTON, PA.

TO HENRY DISSTON & SONS: Philadelphia, Pa.

I want you to publicly test that challenge on Cross Cut Saws. Name time and place within thirty days. American Institute preferred. E. M. BOYNTON.

E. M. Boynton gave on Wednesday of last week an exhibition of what his Lightning Saw could do at the Pennsylvania State Fair, in which two men sawed through a sound oak log, 16 inches in diameter, in 17 seconds. Mr. Boynton informs us that his export trade is increasing, having lately made large shipments of his saws to Australia and other distant markets.—*The Iron Age*, Oct. 8, 1874.

For fuller report of this exhibition see the *Eastern Morning Dispatch* of Oct. 1st, 1874.

Henry Disston & Sons cannot furnish Lightning Saws. Why do they imitate mine?

WHEELER, MADDEN & CLEMSON, Middletown, Orange Co., N. Y.

**WHEELER, MADDEN
&
CLEMSON,**
Manufacturers of Warranted Cast Steel

SAWS

of every description,
including

Circular, Shingle, Cross Cut,
Mill, Hand, Roberts' and
other Wood Saws,
&c., &c.

Cast Steel Files

of the well known brand of

WHEELER, MADDEN & CLEMSON.

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BRUNDAGE FORGED HORSE NAILS

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BEST NORWAY IRON,
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Putnam's Government Standard
FORGED

HORSE SHOE NAILS.

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S. S. PUTNAM & CO., NEPONSET, MASS.

**PYROMETERS
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E. BROWN'S STANDARD PORTABLE.

E. Brown's Improved

Gauntlet



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For Baker's Ovens, Boiler Flues, Galvanizing Baths, Oil Stills, Vulcanizers, Superheated Steam.

Over 300 "Gauntlett" and 100 Portable Pyrometers are now in use at Blast Furnaces.

E. Brown's Portable Blast Gauge for the plug hole, Steam Gauges, Blast Gauges, Mercury Gauges, Recording Steam Gauges, Engine Counters, Indicators for ascertaining the Horse Power.

ALSO,

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INDICATORS.**

The Revolution Indicator is driven like a governor, either from a horizontal or vertical shaft; it constantly indicates, without the use of a watch, the number of turns per minute made by a Steam Engine.

There are many engines which have to run at varying speeds for different operations, also engines controlled entirely by hand. For such, the Revolution Indicator will be found particularly useful.

Circulars on application.

Angular Extension Borer.

Q. S. Backus,
SOLE MANUFACTURER OF
ANGULAR EXTENSION BORER.

Salesroom, 82 Chambers St., N. Y.

This tool can be used in any brace, at any angle, and also for straight work. Is the best and most convenient tool of its kind ever offered to the public. Eight thousand sold the first year.

Also Manufactures the Straight Extension

Backus's Pat. Improved Bit Brace.

The socket is arranged so that the strain does not come on the jaws, but on the square hole which fits the end of the bit. The jaws are attached to the sleeve holding the bit firmly in the square, and center it truly. The sweep is of wrought iron. The handle is of the best stock. Its appearance is neat. Mechanics who have used it unanimously pronounce it superior to all others, and we consider it the trade as the strongest, most strong, and quickest operating brace in the market. We manufacture five sizes. The size in inches of sweep corresponds with the commercial number of the bit.

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Manufacturers of and Dealers in all descriptions of Moulders' and Plasterers' Tools, and Dealers in General Hardware, Gilded Copper Weather Vanes, CARTERS' PATENT CARRIAGE LIFTING JACK, &



Cutlery.**John Russell Cutlery Co.,**

FACTORIES AND OFFICE,

TURNERS FALLS, MASS.

Manufacturers of

TABLE CUTLERY,
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IN GREAT VARIETY.

Extra Hard Rubber Handle Table Cutlery of our own Manufacture.

Fine Ivoride Handle Table Cutlery, very White and Durable.

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Manufacturers of all kinds of

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Cook, Butcher, Shoe and Hunting Knives. Sole Agents for Rogers' Cutlery Co.

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Pen and Pocket Cutlery, Solid Steel Scissors, F. & L. Shears, Razors, Russia Leather Straps, Oil and Water Hones, &c.

Sole Proprietors of the renowned full concaved patent

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AWARDED THE MEDAL OF MERIT.

VIENNA 1873.

American, German, English Pen, Pocket & Combination Knives.

Scissors Scissor Cases Razors, Hones, Straps, &c., Heinisch Tailor Shears, &c.,

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TABLE KNIVES AND FORKS OF ALL KINDS,
AND EXCLUSIVE MAKERS OF

And the "Patent Ivory" or Celluloid Knife. These Handles never get loose, are not affected by hot water, and are the most durable knives known. Always call for the Trade Mark "MERIDEN CUTLERY COMPANY" on the blade. Warranted and sold by all dealers in Cutlery, and by the MERIDEN CUTLERY CO., 49 Chambers Street, New York.

THE MILLER BROTHERS CUTLERY CO.,
Manufacturers of
PATENT FINE PEN & POCKET CUTLERY

WEST MERIDEN, CONN.

The only Knives made that are put together in such a manner that there is no strain on the covering or frail part of the knife. We warrant our knives equal in cutting qualities and workmanship to any made, and are acknowledged by English makers as the Best American Knife. We also make

NICKEL & SILVER PLATED POCKET KNIVES

which will not rust or become discolored when used as a Fruit Knife, and their cutting qualities are equal to any other knife. Orders filled from the factory or by

J. CLARK WILSON & CO., 81 Beekman Street, N. Y.

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The most complete assortment in the U. S. of Shank, Socket Firmer, and Socket Framing Chisels.

PLANE IRONS.

Gongs of all lengths, and circles beveled inside or outside. Nail Sets, Scratch and Belt Awls, Chisel Handles of all kinds. Orders filled promptly; generally same day as received.

ESTABLISHED 1852.

NEW YORK KNIFE CO.

MANUFACTURERS OF SUPERIOR

Table & Pocket Cutlery,
WARRANTED TO BE MADE OF THE BEST MATERIAL.WALKILL RIVER WORKS,
Walden, Orange Co., New York.
THOS. J. BRADLEY, President.**Wood's Hot Water-Proof Table Cutlery.**

Handsomest, Cheapest, most Durable Cutlery in use. Wood's Celebrated Shoe Knives. Butcher Knives a specialty.

WOODS CUTLERY CO., Antrim, N. H.
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Clausberg's Warrented Pen and Pocket

Knives, Razors, Scissors, &c.

SPECIALISTS:

Full Concaved Razors, Wostenholm's Pocket

Knives, Razor Hones, Heinisch Tailor Razors, &c.

Wade & Butcher's Razors, and Cutlery in general.

AMERICAN PEN AND POCKET KNIVES,

MANUFACTURED BY PEPPERELL,

Aaron Burkshaw.

My Blades are forged from the best Case Steel, and

warranted. To me was awarded the Gold Medal of the Connecticut State Agricultural Society; also a Medal and Diploma from the Mass Mechanics' Ass'n Sept., 1860

CLARK WILSON & CO., Agents, 81 Beekman St., N. Y.

Cutlery.**PHILADELPHIA CORRESPONDENCE.**

PHILADELPHIA, Feb. 1, 1875.

A great obstacle to the improvement in business, which has been lately noticeable, is the horribly inclement weather which has been inflicted on us. The sleety, icy storms which have followed each other in rapid succession since New Years Day, have placed our city streets in a dangerous condition, obstructed navigation, delayed trains on railways, and given a decided setback to all enterprises looking toward the spring trade. While this hyperborean condition lasts it is impossible to transact business or move goods with any satisfaction, and hence, for the present, we may expect comparatively little improvement. An unnecessary degree of uneasiness has been aroused in regard to the financial condition of our city and near-by iron firms, through sensational and exaggerated rumors of the failure of prominent firms. Even the generally well informed correspondent of the *Tribune*, of your city, asserts that without an improvement in the market for iron numerous failures must occur. The real cause for this scare is to be found in the temporary suspension of Malin Brothers, iron commission merchants, of this city, and of Samuel Fulton & Co., furnace owners and pipe founders of Conshohocken and Norristown, with headquarters here. These embarrassments were not noted at their occurrence in this correspondence, because it was generally understood that an arrangement with creditors could be made and the firms go on. In the former case this has been effected, and it is said will also be in the latter. The disposition to exaggerate actual losses and invent injurious reports to the credit of manufacturers cannot be too strongly reprehended. The rumors which have been coupled with the names of some of our leading iron makers have been numerous and extravagant. In one case a manufacturer was currently reported on the street to have gone to protest, when another in the same trade announced in my hearing his willingness to sell the suspected individual to the amount of half a million on his four months paper. Careful inquiry among both the leading manufacturers, and those who handle their paper, assures me that there is no such danger as apprehended. Some firms, who have carried their entire product for better prices, or have it under hypothecation, are pinched until they can realize, but with the actual appreciation in iron, and the really decided improvement in orders to mills, this can be but a short time. The truth is that all grades of iron are advancing, that we now find holders refusing anything under a fair profit, and that while there have been one or two failures the mass of the trade is sound, financially, as it has been all through the panic, although having suffered more severely from it than any other branch of American industry. Under such a state of affairs any withdrawal of confidence now would be both unjust and impolitic.

The important features in the local news of the week have been the report of the Senate Committee on navy yards, recommending the consolidation of several yards in one, the sale of the old city navy yard here, and the immediate completion of the League Island Navy Yard as a first-class station. At this point the old yard here, and the Washington Navy Yard, are to be consolidated. The report is strong in favor of League Island from its position, contiguous to coal and iron, natural advantage, and cheap skilled labor. The recommendation of the committee will doubtless be adopted, and the improvements to be made will furnish employment for many hands, and an active demand for iron work.

To-day the Philadelphia and Reading Railroad Company put into operation, on their Germantown and Norristown branches, the first

approach to the Parliamentary trains, in use in England, yet adopted in this country. These are to be called workingmen's trains, and run at hours in the morning and evening which will enable mechanics to reach their work before seven o'clock in the morning, and to return to their homes after six at night. The fares are reduced to an average of ten cents per trip for the extreme distances, in each case about eight miles, with corresponding reductions to nearer points. Workingmen heretofore have not had the benefit of coupon tickets, which cannot be had in less quantities than \$5 worth at a time, and the change will be greatly to their advantage. The important portion of the change, however, is that it introduces into the United States a step toward class travel, an arrangement in railway passenger traffic always needed, and particularly in this vicinity as the Centennial approaches. The Reading Company proposes many local improvements, and in this way is deserving of the thanks of our people for them; although it does get roughly handled for its coal freights and side combinations in the coal line.

The Steel Tariff.

The meeting of the Iron and Steel Committee of the New York Board of Trade, was held on Monday last, at No. 23 Park Row. Mr. John Leng, chairman of the committee, presided.

Among those present were George Sanderson, of G. Sanderson & Co.; Henry Moore, of J. & Riley Carr; Charles Hugell, of Wilson-Hawkins & Ellision; J. M. Montgomery, of Peter A. Frasse & Co., A. Clark and G. W. C. Clark, secretary of the Board of Trade. The letter of Hon. Fernando Wood, addressed to the merchants of New York, was attentively considered.

The merits of the "Little Tariff Bill," and the proposed new measures of Congress affecting imports were discussed. A strong expression was made in favor of appointing permanent Commissioners of Customs, who should regulate and superintend the collection of customs duties, and by uniform action avoid the vexations and uncertain interpretation of the acts of Congress relating to imports, from which merchants now suffer. It was resolved that a copy of the report of this committee, as published, be sent to each member of Congress, and particularly to the members of the Committee on Ways and Means. Also, that a memorial to the same effect as the report be at once presented to Congress by the Board of Trade; and that a distinct protest be made against the proposed reimposition of the ten per cent. duty on imported metals, after which action the committee adjourned to meet at the call of the chairman or other proper officer.

The following are the principal points of a report made by the gentlemen whose names are appended to it, setting forth the reasons why, in the judgment of the committee, the duties imposed upon steel under the existing tariff,

should be materially reduced or abolished:

If there be any insurmountable obstacles to

the total abolition of duties upon steel—which is denied—there can be no doubt that these duties should, in order to foster the interest of the consumers, be made much lower than at present, and so simple that there should be no possibility of dispute as to the rate of duty upon any parcel of steel.

The rates of duty upon and classification in our present tariff relating to steel are as follows:

Steel, in bars, Ingots, sheets and coils, value seven cents or less per pound, two and one-quarter cents per pound; value seven, and over eleven cents per pound, three cents per pound; value over eleven cents per pound, three and one-half cents and ten per cent, ad Valorem. Steel railway bars, one and one-quarter cents per pound; steel in any form not otherwise provided for, 30 per cent, ad Valorem; manufacturers of steel not otherwise provided for, 45 per cent, ad Valorem. All less 10 per cent.

The average rate of duty derived during the last five years upon importations of these various classes, exclusive of steel rails, was 2,492-1000 cents per pound.

This complex system of levying duties, based upon the value, is thoroughly unreliable for the government, and fraught with danger and excessive annoyance to the honest importer. Unreliable for the government, because it is ultimately impossible for any man even to approximately appraise the value of any sample of steel, judging only from its appearance, and this is all that the Custom House Appraiser has to guide him, unless he relies upon all importers' invoices. Upon this point we beg to call your attention to the report of General Starling, the special agent of the Treasury Department, a copy of which is appended hereto.

The appraiser who is called upon to fix the value of an article, from its appearance only, which ranges in price from four and a half cents per pound to twenty-five cents per pound, and whose appearance is scarcely any guide as to its value, finds imposed upon him a duty which he is entirely unable to perform—he really has nothing to guide him except general impressions, and is frequently led, in what he considers the honest and faithful performance of his duties, to inflict serious inconvenience, hardships, expense and suspicion upon the straightforward, honest importers, and also seriously to embarrass consumers, who have to wait for their goods until decisions are arrived at by the General Appraiser. And, on the other hand, there is nothing to prevent the dishonest importer from undervaluing his goods, and thus at the same time robbing the government and obtaining an unfair advantage over his honest competitor. In order to prevent any opportunity for fraud upon the revenue or unjust suspicions against the importer, and to save him the expense and trouble he has been, and is, subject to under the present system, and to aid in the development of general manufactures and commerce, we respectfully suggest that if steel is not placed on the free list, in lieu of the present complex system of taxation, one uniform rate, not exceeding one cent per pound, be levied upon all descriptions of steel, and all manufacturers of steel not otherwise provided for.

We are satisfied that such alteration would not only prevent all trouble and annoyance to honest importers and government officials, but would also prevent the possibility of fraud, and give so much impetus to general manufactures that the revenue from this source would be largely increased.

The statement provided by the Treasury Department of importations of steel and duty derived therefrom, which has been alluded to, is annexed hereto.

JOHN S. LENZ,

EDWARD FRITH,

W. O. WOODFORD,

A. M. J. WATSON,

JOHN HOGAN,

HENRY MOORE,

CHARLES HUGELL.

Steel importations from 1870 to 1874, showing amount realized from average rate of duty. The concession of 10 per cent. during years 1870, 1871 and 1872, is made for the purpose of striking a fair average and ascertaining the exact revenue per pound received. Steel in bars, ingots, sheets or wire, not less than one quarter of an inch in diameter.

Year	Imported Lbs.	Amount of Duty Collected.	Aver. Rate of Duty.
1870.....	31,513,497	\$37,951	2 31/100.
1871.....	41,763,011	983,844	90 per cent.
1872.....	46,337,923	1,085,409	2 35/100.
1873.....	42,346,494	1,067,682	90 per cent.
1874.....	27,685,459	813,168	2 50/100.

Simple Test for Lubricating Oils.—A simple method of testing for hydrocarbons or mineral oils in lubricators, is to fill a bottle with the oil in question, moistening the cork and inside of the neck of the bottle, and then twisting the cork about its longer axis. The best lubricating oils produce no sound, but the more the oil is adulterated with hydrocarbons and products of dry distillation, the louder the noise produced. An oil that gives a loud cry is most unfit for a lubricator.

We invite attention to the advertisement of Messrs. Farist & Windsor, steel manufacturers of Windsor Locks and Bridgeport, who came from England in 1860, without means, but knowing their business thoroughly, soon succeeded in founding one establishment at Windsor Locks, considerably extended since, and later another no less important one at Bridgeport. They are constantly under heavy contracts with the leading gun manufacturers of the Eastern States, and deliver Messrs. Smith & Wesson, of Springfield, alone, 10 tons of de-carbonized gun barrel steel weekly.

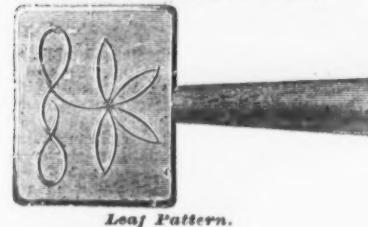
We furthermore call attention to the advertisement of Messrs. Reynolds & Co., of New Haven, manufacturers of iron and steel set screws, &c., long and favorably known in their branch of trade for articles of superior workmanship.

The Shelton Company, of Birmingham, whose advertisement will be found in another column, manufacturers of tacks and small nails, &c., is one of the oldest and most respectable concerns of that important and rapidly expanding locality, having been established nearly forty years ago, and still being managed by its venerable president, Mr. E. N. Shelton, one of the richest land-holders of Derby and suburbs. His son, partner in the firm, has had a most important invention of his patented quite recently—an improved tack paper—the manufacture of which will be conducted by a newly established house, of which he is also a partner, under the name and style of Cornell & Shelton, also of Birmingham.

We call attention to the advertisement of Mr. H. Hammon, manufacturer of cast steel hammers for carpenters &c., of a superior quality and workmanship, recently established in the suburbs of Hartford.

H. D. SMITH & CO., PLANTSVILLE, CONN.

Patent Embossed Steps.



Leaf Pattern.

King Bolt Yokes.



Established 1850.

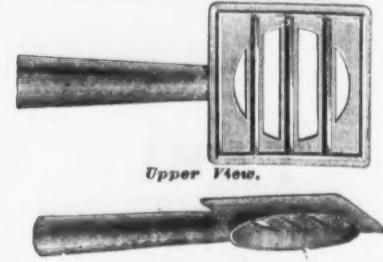
No. 6 Fifth Wheels.



1871 Pattern Shaft Couplings.



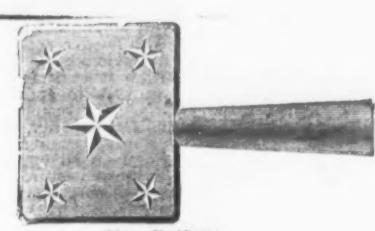
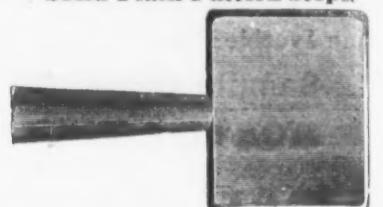
Patent Cross Bar Steps.



Upper View.

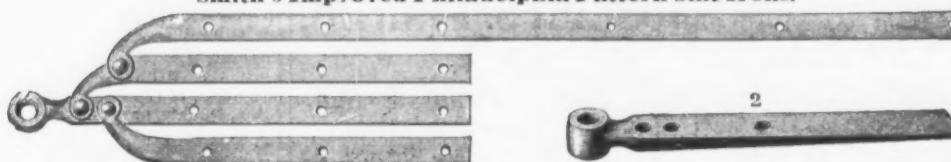
Lower View.

Solid Plain Pattern Steps.



Star Pattern.

Smith's Improved Philadelphia Pattern Slat Irons.



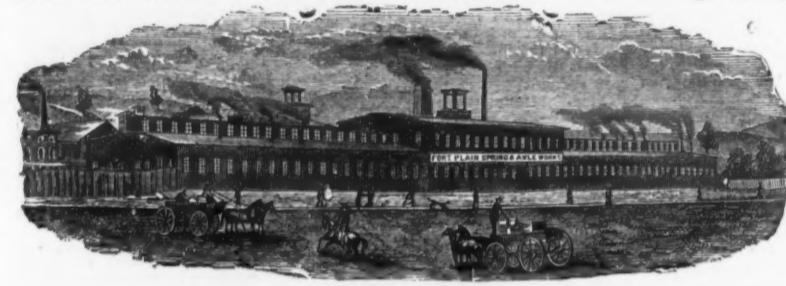
MANUFACTURERS OF A LARGE VARIETY OF FIRST-CLASS

FORGED CARRIAGE IRONS.

Send for Price List.

FORT PLAIN SPRING & AXLE WORKS, CLARK, SMITH & CO.,

Green Jacket Axles. FORT PLAIN, N. Y. Fine Carriage Springs.



Manufacturers of English and Swedes Steel Springs, and Iron and Steel Axles.

Execute orders promptly for

Black, Bright, Tempered and Oil Tempered Springs, by Pattern or Style. Also for AXLES of any description, from a COMMON LOOSE COLLAR to the FINEST OF STEEL.

Our facilities for manufacturing are very extensive, and with our recent additions of new and improved machinery, we defy competition.

Send for Price List and Descriptive Circular.

CARRIAGE BOLTS.

Buy the Best.

Clark's Patent
Carriage Bolt.

Best Bolt manufactured for all kinds of agricultural machinery. Will not split the wood, and can not turn in its place.

MANUFACTURED BY

CLARK BROS. & CO., Milldale, Conn.

Also Manufacturers of

Flow and Machine Bolts, Coach Screws, Nuts, Washers, Tire Blanks, Rivets, &c.

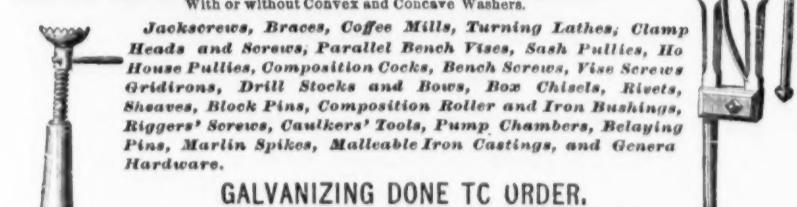
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WILSON MANUFACTURING COMPANY., NEW LONDON, CONN.

MANUFACTURERS OF

SOLID BOX VISSES.

With or without Convex and Concave Washers.



Jack screws, Braces, Coffee Mills, Turning Lathes, Clamp Heads and Screws, Parallel Bench Vises, Sash Pulleys, Ho House Pulleys, Composition Clocks, Bench Screws, Vise Screws Gridirons, Drill Stocks and Bows, Box Chisels, Ropes, Sheaves, Block Pins, Composition Roller and Iron Bushings, Riggers' Screws, Caulkers' Tools, Pump Chambers, Belaying Pins, Marlin Spikes, Malleable Iron Castings, and General Hardware.

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Warehouse, 37 Chambers St., N. Y.WM. H. HASKELL & CO.,
Pawtucket, R. I.

Manufacturers of

COACH SCREWS (with Gimlet Point),
all kinds of

Machine and Plow Bolts,

FORGED SET SCREWS AND TAP BOLTS.

Warerooms, 11 Warren St., N. Y.; H. B. NEWHALL Agent.

CONCORD SPRING WORKS, J. PALMER & CO.,

Manufacturers of

CARRIAGE SPRINGS,

Superior Temper, Warranted.
CONCORD, N. H.

Philadelphia Star Bolt Works.

"STAR"

Carriage and Tire Bolts,

NORWAY IRON,
Button Head.

Trade Mark.

Quality Guaranteed.

Carriage and Tire Bolts,
CHARCOAL IRON,
Beveled Head.

Quality Unsurpassed.

The Celebrated "STAR" Brand of Axle Clips.

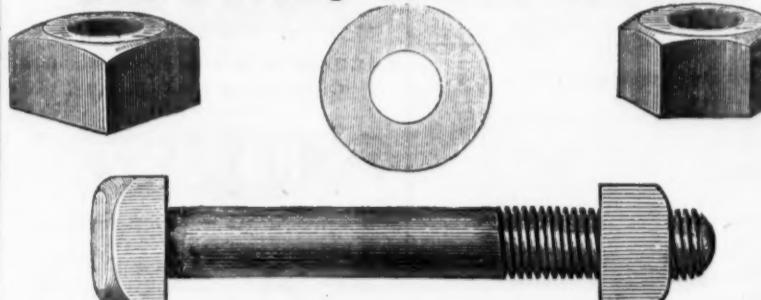
Blank Bolts, Wood Screws, Square Head Bolts, Plow Bolts, &c., &c.

I X L

Our I X L Bolt is made from approved brands of Iron, and is equal in every point of appearance to the regular Philadelphia Carriage Bolts, being made on the same machinery, and the quality is not surpassed by any bolt of like grade in the market.

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Rivets, Nuts, Washers, Lag Screws, Coleman's Eagle Carriage and Tire Bolts, Axle Clips, Felloe Plates, Shaft Couplings, Stove and Machine Bolts, Drilling Machines, Tire Binders, &c. Full stock constantly on hand.

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Manufacturers of
Carriage, Tire & Square Head
Bolts.Cold Pressed Nuts and Washers, Etc.,
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Price lists sent on application.



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Manufacturer of all kindsMachine Bolts, Bolt Ends,
RODS for Bridges & Buildings,
HOT PRESSED NUTS,Washers, Coach Screws, Refined Iron, &c.
Manufacturing my own stock of iron, I am able to control quality, and can orders promptly, with a very superior article, at the lowest possible price. Send for Price List.H. B. NEWHALL, Agent for New England
State, New Jersey and Eastern New York, 11 Warren
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Manufacturer of
Brass, Iron, Steel and German Silver
SCREWS.

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J. AUSTIN & CO.,
168 Fulton Street, N. Y.

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Patented July 9th, 1872.

A. L. JONES,
PAT. JULY 9TH 1872
51 SOUTH 4TH ST.
PHILA.The only self-regulating Steam Trap in the world.
For full description send for circular toA. L. JONES,
Steam Heating Establishment, 51 S. 4th Street Phila.

H. M. WENTWORTH & CO.

MANUFACTURERS OF

Carriage Springs & Axles

P.M. NO. 9 WATER ST., Gardiner, Me.

ALL GOODS
WARRANTED.

The Iron Age.

New York, Thursday, February 4, 1875.

DAVID WILLIAMS - Publisher and Proprietor.
JAMES C. BAYLES - Editor.
JOHN S. KING - Business Manager.

NEW YORK, January 9, 1875.
Until the 1st instant the postage on newspapers was paid by subscribers at the office where the paper was received, the yearly rates on the different editions of *The Iron Age* being as follows: Weekly, 40 cents; Semi-Monthly, 40 cents; Monthly, 24 cents. Under the provisions of the new postal law, which went into effect on the 1st instant, prepayment at the office of mailing is required, at the rate of two cents per pound for the Weekly, and three cents per pound for the Semi-Monthly and Monthly, which will make the postage as follows on the different editions: Weekly, 50 cents; Semi-Monthly, 30 cents; Monthly, 15 cents.

Our rates of subscription will therefore be as follows:

Weekly Edition \$4.50 a year.
Issued every THURSDAY Morning. Contains full Trade Report for the week, brought up to the close of business on the previous day.

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Issued the FIRST and THIRD THURSDAY of every month. Contains a full Review of the Trade for the previous half month.

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Including Postage.

To	Weekly	Semi-Monthly	Monthly
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Great Britain	6.00	3.00	1.50
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Buenos Ayres	8.00	4.00	2.00
Peru	8.00	3.00	1.50
Belgium	8.00	4.00	2.00
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Brazil	6.00	3.00	1.65

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One square (12 lines, one inch), one insertion, \$2.50; one month, \$7.50; three months, \$15.00; six months \$25.00; one year, \$40.00; payable in advance.

All communications should be addressed to
DAVID WILLIAMS, Publisher,
10 Warren Street, New York.

EUROPEAN AGENCY.
CHARLES CHURCHILL & CO., American Merchants, 26 Wilson Street, Finsbury, London, England, will receive subscriptions (all postage prepaid by us) at the following prices in sterling: Great Britain and France, 20/-; Germany, Prussia, and Belgium, 20/-; Sweden, 50/- They will also accept orders for advertisements, for which they will give prices on application.

CITY Subscribers will confer a favor upon the Publisher, by reporting at this office any delinquency on the part of carriers in delivering *The Iron Age*; also, the loss of any papers for which the carriers are responsible. Our carriers are instructed to deliver papers only to persons authorized to receive them, and not to throw them in hallways or upon stairs; and it is our desire and intention to enforce this rule in every instance.

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American Car Wheels and Car Wheel Irons.

In an article in last week's issue of *The Iron Age* on the use of American car wheels on English and Continental railways, we promised our readers some interesting facts respecting American car wheel irons. These are given in an article published on another page of this issue, which will be found to merit a careful reading.

The American car wheel is one of the most remarkable products of native inventive talent. Like many other improvements, it was the result of an attempt to make something at once cheap and good. Casting wheels was a bold experiment, but owing to the remarkable excellence of the pig irons available for that purpose, it was a conspicuous success from the first. As will be seen from the records of tests in the article to which we have already called attention, our car wheel irons possess

remarkable characteristics. Soft, tough, ductile almost to malleability, they possess more of the character of wrought than of cast metal; and their ability to chill to a great depth renders it possible to give the wheels a tread as durable as the best tires now in use upon English wheels. During the past few years the manufacture of cast iron car wheels has been brought to great perfection in this country. It is a business which requires skill, experience and good judgment. To insure success in casting, the weather, the workers, the iron, the shape and kind of wheel, the service to which it is to be employed, the molding, the chilling, all must be taken into account, as any of these causes or conditions may materially affect the result. The quantity produced is also an important factor in the calculation, as a little overcrowding of a works is pretty sure to tell upon the quality of wheels made. The chilling is in itself an operation which requires judgment and care. When certain kinds of iron touch cold iron in the mold, they chill quickly and become so hard that a file will not cut them. If the molds are not properly made the wheels are apt to warp in chilling, which makes them untrue and renders them unfit for service under passenger cars. The molding has much to do with the quality of a wheel, and only a good workman can make a mold in which a good wheel can be cast. To be good, a wheel must be essentially perfect, and the endurance of a good wheel, as compared with a poor one, is something wonderful. A poor wheel is liable to break down, or round out, after a few hundred miles of travel; a good wheel has been known to travel more than one hundred thousand miles, and, in one instance, over two hundred thousand. When the cost and trouble of taking out old wheels and putting in new ones is taken into account, the economy of good wheels is easily seen. Their greater safety is also an important consideration, and one to which our railway managers are by no means indifferent. As the rule, only wheels of first quality are used under passenger cars in this country. Our railway managers cannot afford to use poor wheels, and they do not.

As we stated in our article of last week, this subject has great interest and importance for the managers of foreign railroads. Issues of the English technical journals received this week are filled with accounts of the terrible Shipton disaster, which shows the danger to be apprehended from the use of wheels with welded tires. The Engineer, especially, discusses the subject with great thoroughness, and publishes, in addition to two pages of text, a page of illustrations showing the character of the tires used by the different English railway companies. This article is so interesting that we regret our inability to give it entire, owing to the pressure of advertising upon our columns and the limited space we have been able to reserve for reading matter. We make one extract, however, which will serve to show the uncertain duration of the best welded tires.

A careful examination of the reports of government inspectors on railway accidents will, alone, be sufficient to show that some curious phenomena attend the bursting of a tire in very many cases. To say nothing of the very erratic course pursued by the fragments when they leave the wheel, we are presented at the outset with the fact, which has never yet received any rational explanation, that tires instead of merely cracking through in one place, generally fly into a number of pieces. It is true that sometimes one fracture only occurs. In others there are two fractures, but the number and situation of the lines of breakage are apparently quite indeterminate. To illustrate our meaning, let us take Captain Tyler's last report on railway accidents in the United Kingdom. On the 1st of May, 1873, the tire of a wheel under a London and Northwestern van broke near Upton Magna. It seems that this tire broke at only one place where there was a flaw, and it failed in passing over a turned rail. Much injury was done, as the train ran off the line and down an embankment. Here we have the suggestive fact that the tire gave way in one place only, as we gather from the report, although so much is not definitely stated, that the fracture took place at a defective weld, and that it resulted from the passage of a train over a turned rail. On the 6th of January, 1873, a Leeds express on the Midland was running at its usual pace near Royston, when the rear leading tire of the engine flew from the wheel in six pieces. On the 8th of the same month, on the same line, a carriage wheel tire flew off; a child's foot was injured, as the flooring was thrown up by a portion of the tire. From this we gather that the tire broke in more places than one. On the 28th of April the driving tire of a Midland engine running the Derby, Birmingham, and Bristol mail, flew from the wheel in seven pieces near Stenson Junction. 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As announced in the call printed elsewhere, the annual meeting of the American Iron and Steel Association will be held on Thursday, February 11th instant, at 11 o'clock, a. m. The meeting will be in the rooms of the Association, No. 265 South Fourth street, Philadelphia. An interesting and important session is expected.

The National Association of Stove Manufacturers will meet at the Palmer House, Chicago, on Wednesday the 10th instant. In view of the importance to the trade of matters which will come before the meeting for discussion, a large attendance is expected.

William Leonard Faber.

On the first page of this issue we republish, by request of many lovers of poetry and friends of the late Prof. W. L. Faber, a translation of Schiller's "Song of the Bell," made by that gentleman for *The Iron Age* some years ago. This is as nearly as possible a literal translation, and preserves the spirit of the original more perfectly than any English version of this beautiful poem yet given to the public. We also take this opportunity to offer a brief tribute to the memory of our friend and former contributor, Prof. Faber. We regret that our limited space does not permit us to use more fully the materials for a biographical sketch kindly furnished us by his family.

William L. Faber was the only son of Conrad W. Faber, a well known merchant of this city, and for many years Consul of Hesse-Electoral at this port. His rudimentary education was acquired at St. Paul's College, Flushing, L. I. His studies were continued at a Gymnasium in Hanover, Germany, where he learned the German language. This was followed by a collegiate course in this country, after which he returned to Germany and studied for several years at the Universities of Marburg, Gottingen, Gelsen, Berlin, and at the mining schools of Clausthal and Freiburg. His education had included courses in philosophy, ethics, belles-lettres, chemistry, mining and metallurgy. His instructors were Bunsen, Liebig, Woehler, Plattner, Kerll and others, and among his fellow students were Tyndall, Frankland, and other young men who have since attained great eminence in science, and who found in Faber a congenial friend and industrious collaborator in scientific research. Intending to follow metallurgy as a profession, he concluded his studies by a tour of inspection among the metallurgical works of Europe, and returned to the United States. His first engagement was in connection with the development of copper mines in New Jersey, but he was too much of a genius to be successful as a man of business, and he found it impossible to devote himself to the drudgery of his profession by which wealth is acquired. He was always undertaking and accomplishing work of great value to others, but reaped none of the profits for himself. During this time he made many important improvements and discoveries which would have made a more practical man rich, but he gave the results of his labors to the world, and others patented what he had found out.

His next venture was in journalism, for which he manifested exceptional talent. At the outbreak of the war he joined the Southern army, and rose rapidly in rank; but domestic bereavements preyed upon his mind and he retired from the service. After the war he traveled in the West, prospecting successfully for metals. During this time he contributed to *The Iron Age* many valuable papers, including an interesting series on the metallurgy of copper, tin, lead, zinc and antimony. Just as he was beginning to see his way clear to the attainment of wealth, he was stricken with pneumonia, brought on by the exposures encountered in the mining districts, and died at Salt Lake City, in November, 1873, at the age of 43 years.

Personally Prof. Faber was a most agreeable gentleman, with many noble qualities of mind and heart. We remember with pleasure our acquaintance with him, and profoundly regret its abrupt and untimely termination.

Annual Meeting of the American Iron and Steel Association.

We have received the following from the secretary of the American Iron and Steel Association:

Office of the
AMERICAN IRON AND STEEL ASSOCIATION,
No. 265 South Fourth Street,
PHILADELPHIA, Jan. 20, 1875.

The annual meeting of the American Iron and Steel Association will be held at the office of the Association, No. 265 South Fourth Street, Philadelphia, on Thursday, February 11, 1875, at 11 o'clock, a. m.

Iron and steel makers who desire to become members of the association are invited to be present.

It is expected that the proceedings will possess more than usual interest, as subjects of importance will be considered.

SAMUEL J. REEVES, President.
JAMES M. SWANKE, Secretary.

The New York Central and Hudson River Railroad Company and the Harlem Railroad Company have reduced the wages of the track forces ten per cent. This will place the wages of the employees below the Harlem bridge at \$1.25, and those beyond that point at \$1.12½ per day. A reduction will also be made in the number of men employed in this capacity. Heretofore they have been employed in gangs of seven, which will now consist of five men. They are only employed regularly six days in the week. Whenever their services are required on Sundays or during the night, they are paid at half rates. These switchmen are trembling in anticipation of a further reduction of their wages, which have been reduced from \$60 to \$52 per month. They have not, however, been notified that the reduction will take place, excepting the rumor that the rate of wages would be reduced in all departments of the road.

The Mechanical Properties of American Car Wheel Irons.

Mr. W. E. Partridge, who is at present engaged in compiling and editing a dictionary of technical terms used in car building for the Master Car Builders' Association, has lately conducted a series of experiments, with one of Professor R. H. Thurston's autographic testing machines, upon American car wheel irons. The subject of car wheels, their mileage, breakage, &c., has been extensively discussed by the association, and the car wheel manufacturers have taken a great deal of interest in the matter, not only contributing specimens of iron to be tested, but many of them have been present at the meetings in person, and given a great deal of information upon the subject.

The brands of iron from which American car wheels are made have had for many years a reputation almost world wide. These irons are, many of them, the same as those used by the government for its cast guns, and as gun metals have shown a very high tensile strength, the properties of the same irons, when made up into car wheels, are equally remarkable, though not, perhaps, as well known. In general, a car wheel in service is characterized by a very soft and tough center, while the "tread" (the part bearing on the rail) is chilled so hard that a tool will not touch it. Their endurance is also very remarkable, the general average of mileage on passenger and engine wheels being between 50,000 and 60,000 miles, according to the diameters, while in the freight service there are cases where they have run above 250,000 miles.

The metals from which these wheels are made had often been tested in the pig, but we believe that car wheels themselves had never received any accurate determination of their qualities. To do this was exceedingly important, and the presence of the testing machine at the rooms, together with the fact that the subject of wheels was under discussion, made the opportunity unusually favorable one, and Mr. Partridge has pursued the investigation with patience and care. As we have been accorded the privilege of examining the records of the tests, we find in them much that will interest our readers.

We should hardly be correct in saying that car wheels had not been tested at all, for foundry managers are in the habit of testing their wheels by striking with a sledge—the wheel that bears the greatest number of blows with the sledge being, of course, the strongest wheel. As might be supposed, this very crude method would hardly give an accurate measure of the resistance of the wheel, and where different men were engaged in striking the element of individual strength enters as a factor into the result of the test. Now and then makers of wheels had their irons tested for the tensile strength, but, as we have said, there was nothing of a definite nature bearing upon car wheel iron after it had been manufactured. One of the first samples tested at the rooms was a well-known gun iron, such as is usually used in car wheel mixtures. The tensile strength ran up to 39,000 pounds per square inch, a surprising figure, and was for the moment scarcely credited. The next sample tested, however, went still higher before breaking, reaching 46,000 pounds per square inch. Neither Prof. Thurston nor Mr. Partridge could at first credit these figures, as there was scarcely a record at hand in which they had been reached, and but one in which they had been exceeded by a cast metal which showed any ductility. The limits of elasticity, as indicated by the strain diagrams, was also very high, 24,000 and 30,000 pounds per square inch. Below we give a table of the metals tested in this lot, which were peculiarly interesting:

Mark.	Limit of Elasticity.	Ultimate Strength.	Maximum Elongation.	Equivalent Reduction of Section.	Resilience.
P. S.	20,200	31,200	0.0023	0.998	68.0%
P. R.	24,000	36,800	0.0017	0.998	41.7%
C. I.	20,200	30,000	0.0009	0.999	12.0%
O.	9,600	23,300	0.0015	0.998	28.0%
1.	10,400	14,400	0.0065	0.994	62.40
2.	10,400	15,200	0.0040	0.996	40.53
3.	10,400	16,800	0.0038	0.996	41.44

The samples marked P. S. and P. R. were two well known brands of American charcoal irons, P. S. being a No. 3 pig, and P. R. a No. 4 pig. The tensile strain of the specimen P. R. (No. 4 pig) was very high indeed. At some subsequent tests, mixtures of these irons in equal proportions showed less strength but a very remarkable degree of ductility.

The next sample, C. I., was from a mixture of one-half Scotch pig and one-half good anthracite iron. The ultimate strength amounts to only 20,200 pounds per square inch. It was scarcely possible to say whether a limit of elasticity was exhibited by the diagram, which consisted of a straight line rising without a curve to the point of greatest strain, and then snapping after a small twist, the strain falling at once after passing the maximum. This mixture would be comparatively worthless for car wheels, being altogether too brittle. Specimen O was an ordinary mixed car wheel iron from a small testing cupola. This piece exhibits very plainly the fact that the small cupolas do not produce as fine a quality of metal as the larger ones, and that no furnace can produce the best results in car wheels when crowded to its utmost.

Nos. 1, 2 and 3 were all from the same mixture of one-half each of P. S. and P. R. They were samples from 12 tons of molten iron at different stages of casting. Taken from the bottom (No. 1), middle (No. 2), and top (No. 3) of the reservoir. These three were placed in the hubs of the wheels, went into the annealing pits and remained in the hubs during the process of annealing. They probably lost some of their strength from being annealed more than was necessary, owing to their small size.

In appearance the strain diagrams of these three pieces strongly resemble those of wrought iron, only smaller in extent. The line rises rapidly up to the elastic limit, showing great stiffness. It then turns off suddenly, rising but slowly, but showing great ductility, the torsional angle rapidly increasing without a great increase of the resistance. The final parting of the metal does not take place until after the greatest tensile strain has been reached, and the line has commenced to drop, a further resemblance to wrought irons. The ultimate resistance does not rise very high, but the great ductility and comparatively high elastic limit makes the resilience of the pieces very great, being respectively 62.40, 40.53 and 41.44; showing that these irons, if strong enough to bear their load, would be on account of their ductility most admirably adapted to the work to which they are put, exceeding greatly in value the stronger but less ductile metals. One of the specimens sustained a twist of 21°, another 16°, and the last about the same. These figures are very large compared with sample C. I., Scotch pig and anthracite, which had received only a twist of 8° at the moment of rupture.

The next table gives results obtained from testing a lot of samples made direct from new wheels. They were furnished by the superintendent of one of our largest railway car shops. He selected a number of new wheels at random from the stock at the shop, had them broken up and test pieces made from the metal at the hubs. These were quite as remarkable as those previously mentioned, and in some respects even more so. They were certainly more satisfactory, as the metal had received the proper treatment. It is, in fact, precisely that which it would have received had it been going into actual service:

TESTS OF SAMPLES OF CAST IRON TAKEN FROM THE HUBS OF WHEELS.

No.	Limit of Elasticity.	Ultimate Strength.	Maximum Elongation.	Degrees of Torsion.	Resilience.
1.	14,400	26,400	0.0018	11°	32.00
2.	11,200	20,300	0.0017	10° 30'	22
3.	11,200	20,300	0.0034	15°	43.6
4.	13,200	25,600	0.0078	29°	138
5.	9,600	18,400	0.0016	10° 30'	20
6.	9,600	26,000	0.0016	30°	24
10.					

ousness, but had considerable ductility, and perhaps the average strength of car wheel iron, and, while very stiff, had a limit of elasticity very well defined upon the strain diagram. In the last two there was considerably less strength. In S B. no limit of elasticity could be shown with certainty, and in H M. it was hardly to be recognized with definiteness.

Both the latter pieces were homogeneous, showing great regularity in their curves. They would be classed as somewhat brittle, much more so than the others. The stiffness of S T. was greatest, S B. least.

On submitting the report, the gentleman to whom it was sent said that the samples were from two bars two feet long, cast on end. They were both of good car wheel iron. One was soft iron and marked S, the other hard iron and marked H. S T. was taken from the top of the bar cast from the soft metal; S B. was from the bottom of the same bar; H T. was the top of the hard bar, and H M. from the middle of the same bar. When cast, the bars were at once knocked out of the sand and allowed to cool without annealing. This explained the character of the metals, and showed why they differed so much in character. Those pieces from the top, as would be expected, showed an open grain and higher strength than those from the middle and bottom, which probably were somewhat annealed in the cooling (?). The hard metal was the better of the two. These samples, when compared with Nos. 1, 2 and 3 of the first table, give us a very clear insight into the effect which annealing in the wheel pits has upon the metal of the wheels. While their tensile strength is decidedly reduced, their resilience, or capacity to withstand blows, is largely increased, by reason of the gain in ductility which follows annealing.

In mechanical effect it seems somewhat analogous to the malleableizing process practiced upon the gray irons. These irons, according to Prof. Thurston, have, in some instances, shown a tensile strength of 60,000 pounds per square inch, but snapping in the machine like glass, and showing utter worthlessness for ordinary purposes. After being annealed there was a reduction in tensile strength, but they became as ductile as wrought iron, and, for many purposes, equally serviceable. Steels at times show a similar phenomenon.

The accompanying illustration shows several strain diagrams, which illustrate the character

wheel centers are also made from wheel iron. Throughout the country wheel iron is used wherever castings of great strength are needed. Some of the best firms in the country are large purchasers of old wheels to work up into hydraulic cylinders, presses, boring mills and, in fact, all large or thick castings requiring great strength. Owing to the hardness of the metal, old wheels do not answer so well for small castings, and for these the softer grades are used; but for massive work old wheels are most admirable. Certain brands of old wheels are much sought after by some steel makers, and an excellent brand of steel is made from them.

The price of old wheels usually runs about five dollars per ton higher than the ordinary forge irons. This excess of price is brought about by the arrangements between the wheel makers and rail road companies.

The stock of old wheels in the country at the present time is, probably, about 60,000 tons. In usual states of rail road business, the companies wish wheel makers to take one old wheel in exchange for every new one. But in these times the stock increases, as companies are not building to any extent, and are taking out more than they are putting in. This practice of selling old wheels to wheel makers has led some to attempt to remelt old wheels for the manufacture of new. A small quantity of old metal can be introduced into a wheel, but the wheel cannot, by any process, be made as good as from new iron, and when old iron is used in wheels the quality is deteriorated and a first-class article cannot be produced.

The testimony of wheel makers, car builders, and all experts, is unanimous on this point. One maker, at a recent meeting of the Master Car Builders' Association, said on this subject "Nearly all wheels are supposed to be made of charcoal iron. If these wheels, when used a second time, were remelted with charcoal, they would not, I think, deteriorate, but as anthracite coal is generally used in remelting, and as this contains more or less impregnated with it, and the quality is impaired in proportion."

Another gentleman suggested that the rail-road companies should dispose of the wheels to rolling mills instead of to the wheel founders.

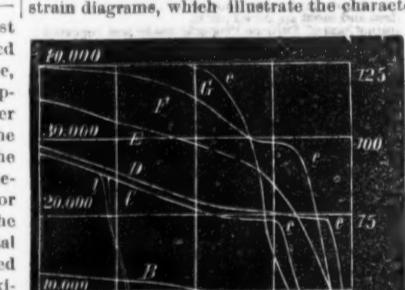
The use of car wheel iron in either rails or bars, is not attended with any increased expense other than that of breaking up the wheels. Of course the greater price of the wheels over that of ordinary pig metal makes the cost of the product greater, but to a railroad company there would be this gain—if wheels are sold at a high price to wheelmakers, a deteriorated product results, while, if sold to rail makers or rolling mills, an improved result is secured.

In regard to the value of wheel iron in the heads of rails, one of the leading iron masters of the country expresses the opinion that they are of the highest value. Estimating that the life of a rail extends up to the point where 50 per cent. fail, figures in possession of this gentleman show that the average life of a rail, with a wheel iron head, is about 59 years or 70.8 months, while the life of the common rail was only from 27½ months to 29 months. In some remarks made regarding certain rails, and their manufacture, he says: "The kind of iron employed, and the method of manufacture, were varied somewhat in the different years; the figures show that the earlier rails in which car wheel iron was used were the best."

In speaking of another lot which had been carefully inspected, and the records of wear, etc., obtained, the following remarks were made in reviewing a table of the results: "The rails made from car wheel iron appear to have been better than those made in later years from anthracite iron, and this indicates that the quality of iron is an important element, even if the fracture of the metal appears equally good."

At the close of the war one of our Eastern firms purchased from the government a large quantity of disabled and condemned cast iron guns, at a very low figure. These guns were considered practically worthless, because they were so tough that they could not be broken up without an enormous expense. One party tried the experiment of cutting them up in a lathe, and found the metal cost as much as new pig, others tried gunpowder with equally poor success. Guns were, consequently, somewhat of a drug in the market. The firm of which we speak built furnaces by which they could melt a gun down bodily and so saved the expense of breaking them up. They have since that time been largely engaged in making castings of all descriptions in which great strength is required, and have had, as we understand, a large trade in such castings, which is constantly increasing as the value of the metal becomes known. This metal, though from the same ores and furnaces as the wheel irons, differs in having been melted in an air furnace a number of times till its maximum strength has been reached. All these metals, whether wheel or gun iron, are nearly equal to the commoner sorts of bar iron in their resistance to tensile strain, though of course their power of resisting shock is much less.

The question may arise whether the exceptionally high figures, above given, are to be relied upon as perfectly exact, and whether there have been a sufficient number of samples tested of each kind to make the figures accurate. As comparisons between the metals, there can be no doubt of their accuracy, as each specimen was tested under precisely similar conditions, a point of much importance. Facts connected with the different lots of metal from which the samples were taken, lead us to think that the figures are fair averages. For example, one of the test pieces came from a lot of pig metal which was broken up in the foundry yard with the greatest difficulty, as the superintendent expressed it, "the lot broke the back of every striker in the yard." In other cases the appearance of the wheels, and the bars from which test pieces came, confirm unmistakably the testimony of the machine.



of the metals from

Incidents of the British Trade in 1874.—The London *Times*, noticing a selection from the trade reports for last year, says, that bullion enjoys a similar sovereignty in the commercial realm, and London is the great treasury of the world. Next to gold comes Colonial wool. In woolen goods there has been a steady depreciation for years, telling on the total value of the exports as far as regards woolen cloth, blankets and yarn. Chemicals come next. Though England is now producing more than ever, and selling at lower prices, the export increases. It has not been a good year, we are told, for freights, except from the Eastern rice ports and for guano. In iron and coal, half the gain in price has been lost at home; production has been checked, perhaps, and the restoration of our exports to the scale of a few years back, depends on the question whether Americans and England's neighbors can compete with her at comparatively low prices as well as they have done at the exceedingly high prices lately prevailing. The demand for hides has been great and the supply not adequate, and the result has been to enhance prices abroad. Respecting tin, a large number of mines are working at a loss, and many without profit. Americans, it is said, are getting the currants their little folks ought to have, because the duty still makes a difference in their favor. Rice has suffered the ups and downs of an Indian famine. Indigo is a strong and sure article, as it always has been; silk, on the contrary, the weakest, frailest, and least to be depended on. Lastly comes tallow. Its rivals multiply, but so do its consumers. Light is the universal cry of the world, and tallow is its chief and most convenient material.

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Metallic Iron	Undertermined Mat-	ter and loss	134
Oxygen with iron 60/10	Undertermined Mat-	ter and loss	134
Water	330	Silicon	1019
Insoluble silicon	4320	Carbon	3821
matter	4320	Phosphorus	948
Sulphur, practically none	4320	Sulphur, practically none	140
Phosphorus	4320	Alumina	94328
Alumina	4320	Metallic iron	100000
Lime	140	Undertermined Mat-	100000
Undertermined Mat-	392	ter and loss	100000

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Sulphur, practically none

Phosphorus

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Lime

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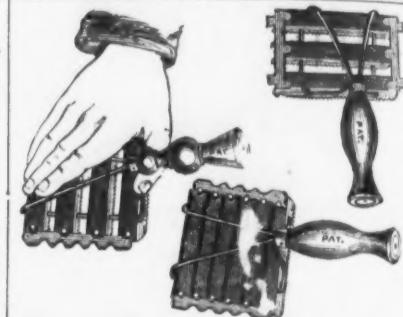
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1874.

REWARD OF SKILL AND
Diligence.

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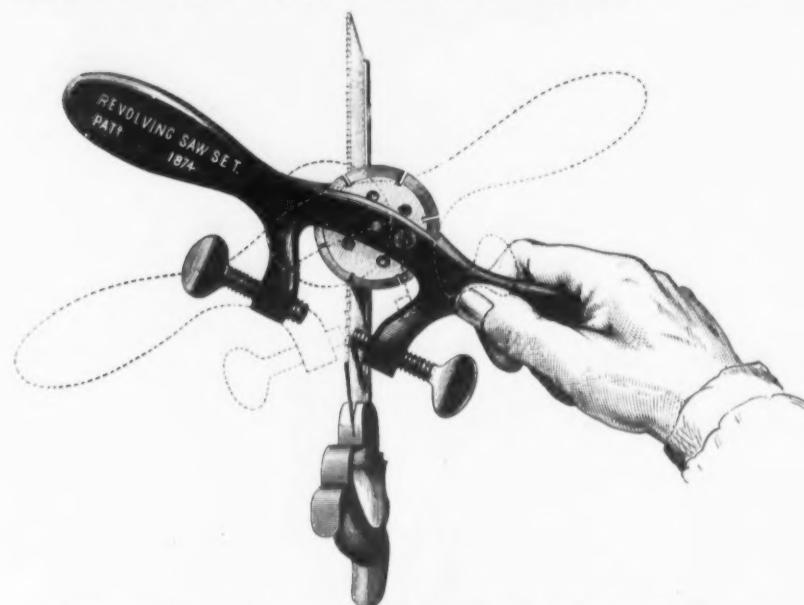
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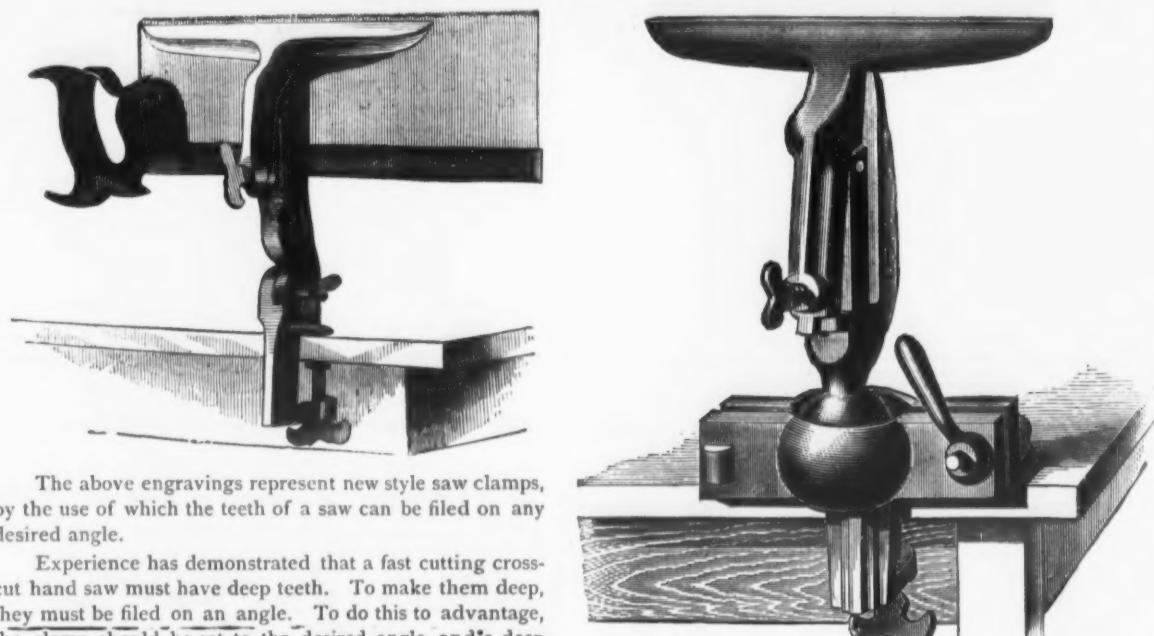
Henry Disson & Sons,
Philadelphia, Pa.

HENRY DISSTON & SONS' PATENT REVOLVING SAW SET.



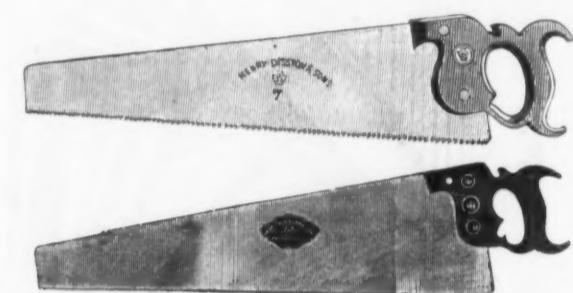
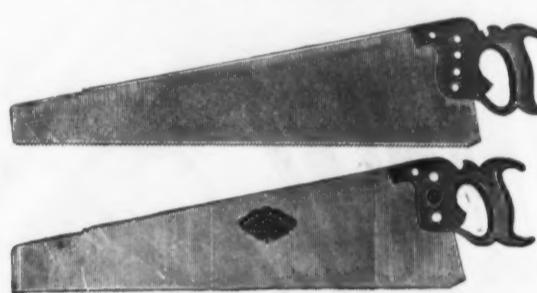
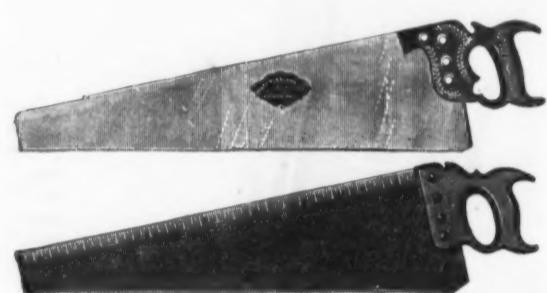
Among the advantages claimed for this useful little tool are the following: 1st. It is portable, simple, effectual, and cheap. 2d. It can be readily adjusted to any size tooth from a 14 point back saw to a 4 point rip saw. The tooth in front of the one being set forms a guide for the tool, and the operator can readily and with certainty slide the set tooth to tooth even with his eyes closed. The different bevels on the disk are in accord with the different slots for the various sized teeth. The screws on each side determine the amount of set.

IMPROVED UNIVERSAL SAW CLAMPS.



The above engravings represent new style saw clamps, by the use of which the teeth of a saw can be filed on any desired angle.

Experience has demonstrated that a fast cutting cross-cut hand saw must have deep teeth. To make them deep, they must be filed on an angle. To do this to advantage, the clamp should be set to the desired angle, and a deep gullet tooth can, by this means, be filed quite as readily as a square bottom tooth. Another great advantage to be derived from this mode of filing is, that the teeth can be set more easily and with considerably less risk of breaking.



PANEL SAWS.



NEST OF SAWS.
Combining one each Keyhole, Compass, Table or Pruning Saw.

These Saws are admirably adapted to Plumbers' use, where blades are frequently broken, as they can be immediately substituted in the same Handle at trifling cost.

They will also be found a great acquisition to the Gentleman's Tool Chest, the three blades readily interchanging in the same Handle. The large blade can be used as a Table or Pruning Saw, and the smaller ones as Lock, Compass, or Keyhole Saws.

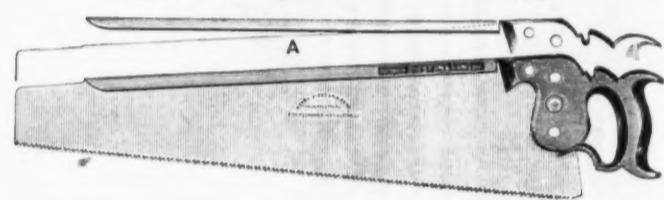
Improved Reversible Hack Saw.



GENTS' HALF BACK BENCH SAW.

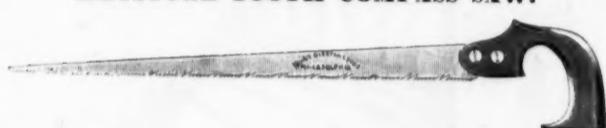


HAND SAW, with Movable Back.



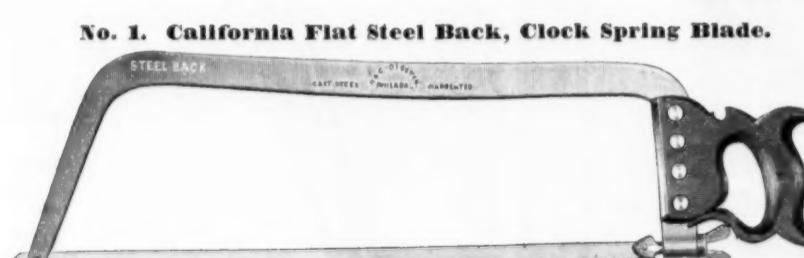
This Saw can be used with equal facility for either a Hand or Back Saw. When the back *A* is removed the Saw can be used as a Hand Saw. Replace the back, and a first-class Back Saw is the result.

KEYSTONE TOOTH COMPASS SAW.

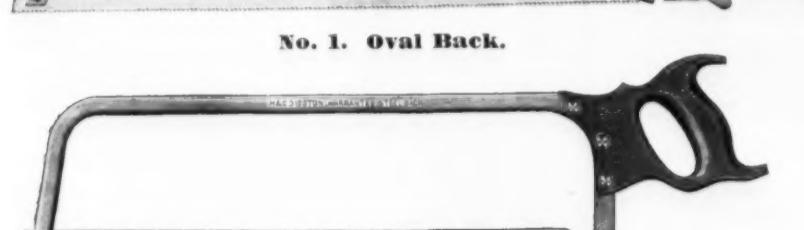


Compass Saws with Keystone Tooth, as per engraving above, for both ripping and cross-cutting, 10 per cent. extra.

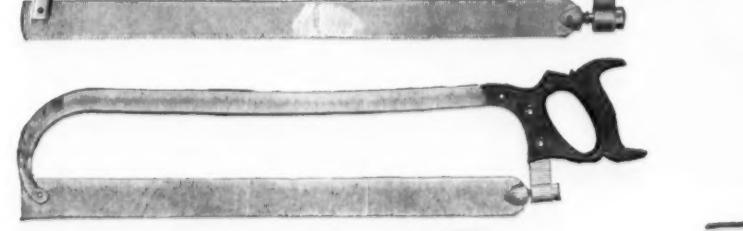
BUTCHERS' BOW BACK SAWS.



No. 1. California Flat Steel Back, Clock Spring Blade.

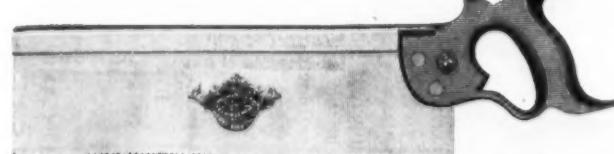


No. 1. Oval Back.



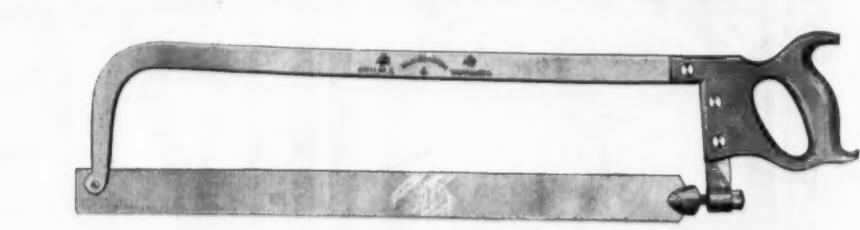
"DISSTON" SAWS
are warranted.

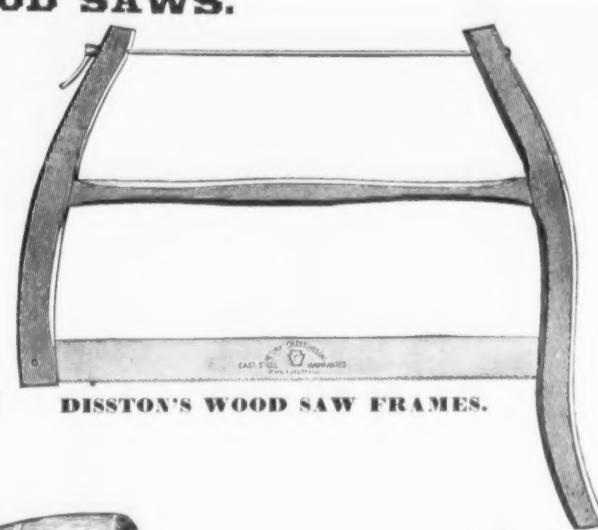
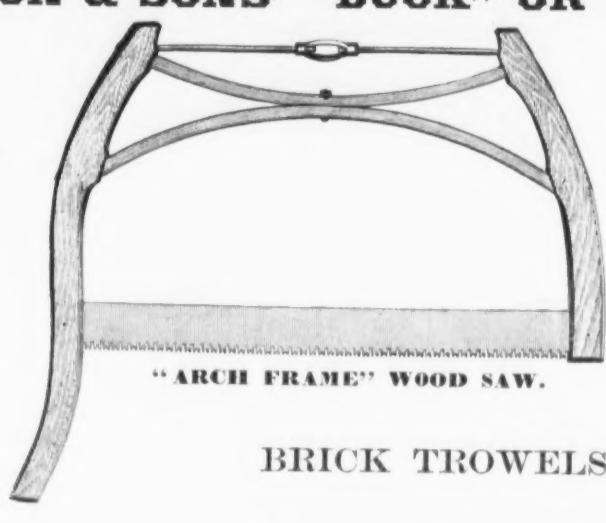
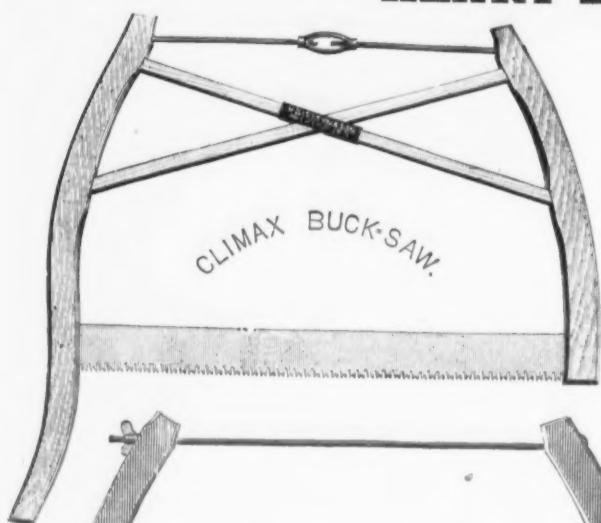
Improved Quality Cast-Steel Back Saws.
With Steel Backs.



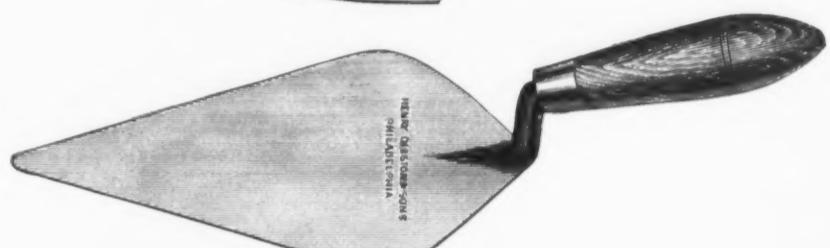
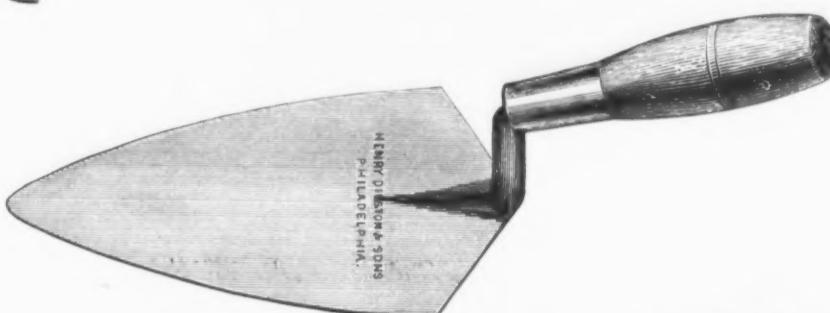
No. 77. Back Saw, Disston & Sons' "Mechanics' Own," to run without set.

No. 2. California Oval Steel Back.

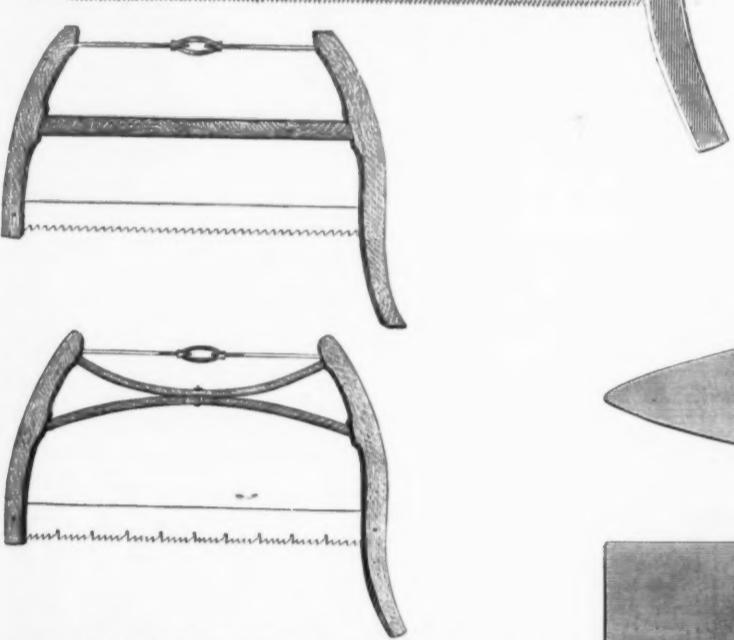


HENRY DISSTON & SONS' "BUCK" OR WOOD SAWS.

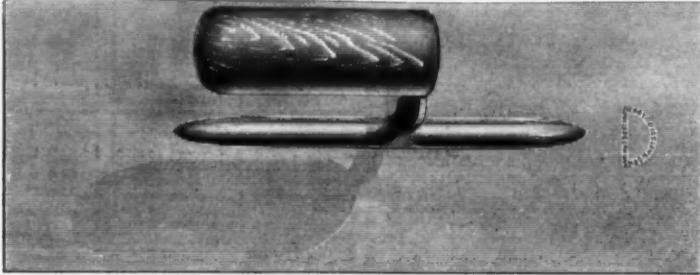
BRICK TROWELS.



PLASTERERS' TROWELS.



WARRANTED CAST-STEEL CANE KNIVES.

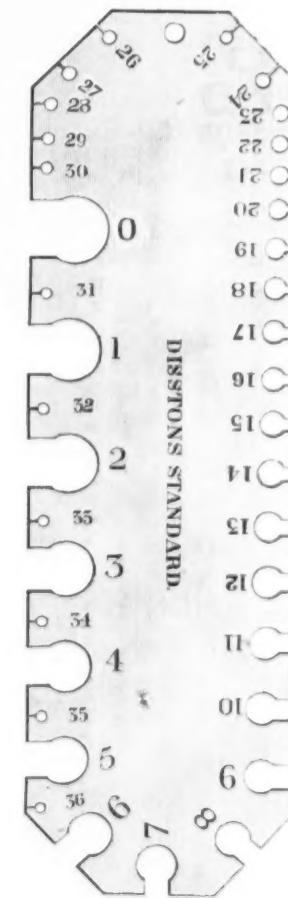


MOULDERS' TOOLS.

A practical moulder superintends the manufacture of these goods, which are made from the best quality cast-steel, perfectly tempered, and warranted.

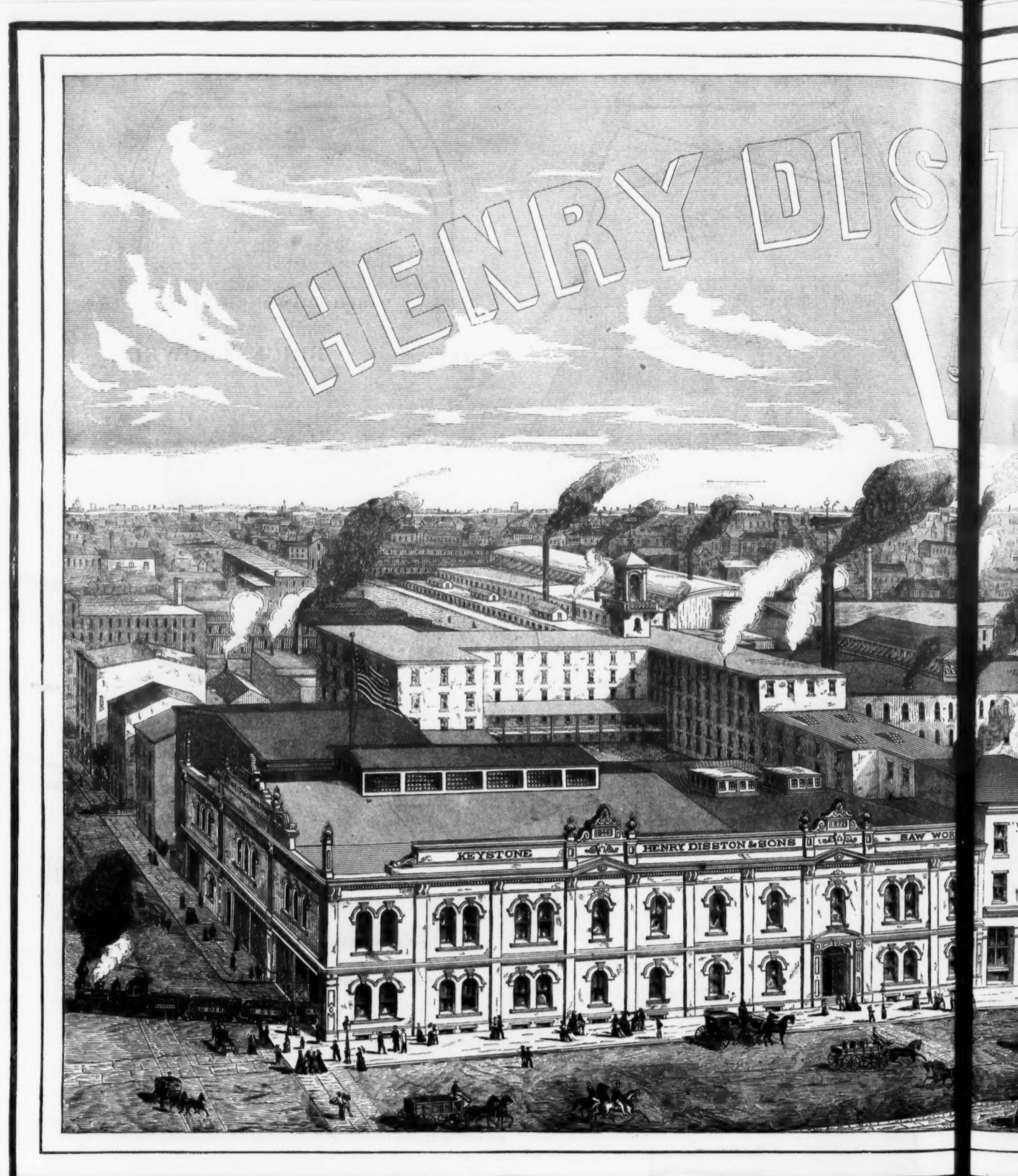


All goods marked "DISSTON" are fully guaranteed.



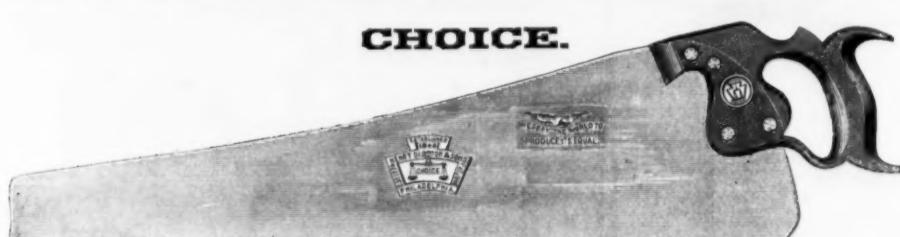
DISSTON'S STANDARD.

All goods marked "DISSTON" are fully guaranteed.



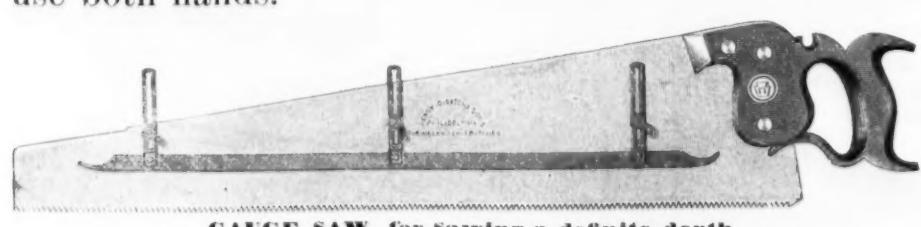
HENRY DISSTON & SONS'
New Patent Skew-back Hand-Saw,

CHOICE.



This Saw is the "**CHOICE**" of all first-class Mechanics
who have used it.

It is singular, yet true, that although immense improvements have been made, of late, in the grip of the Hand Saws of centuries ago. We have recently patented a Hand Saw which, we believe, is much stronger in proportion to the amount of metal in the blade, and more free from tremor than those which possess many advantages over the old style. They bring the operator closer to his work, and are less liable to accidental blow or a fall. The Rip Saw handle is coped out to admit the thumb of the left hand, giving both hands.

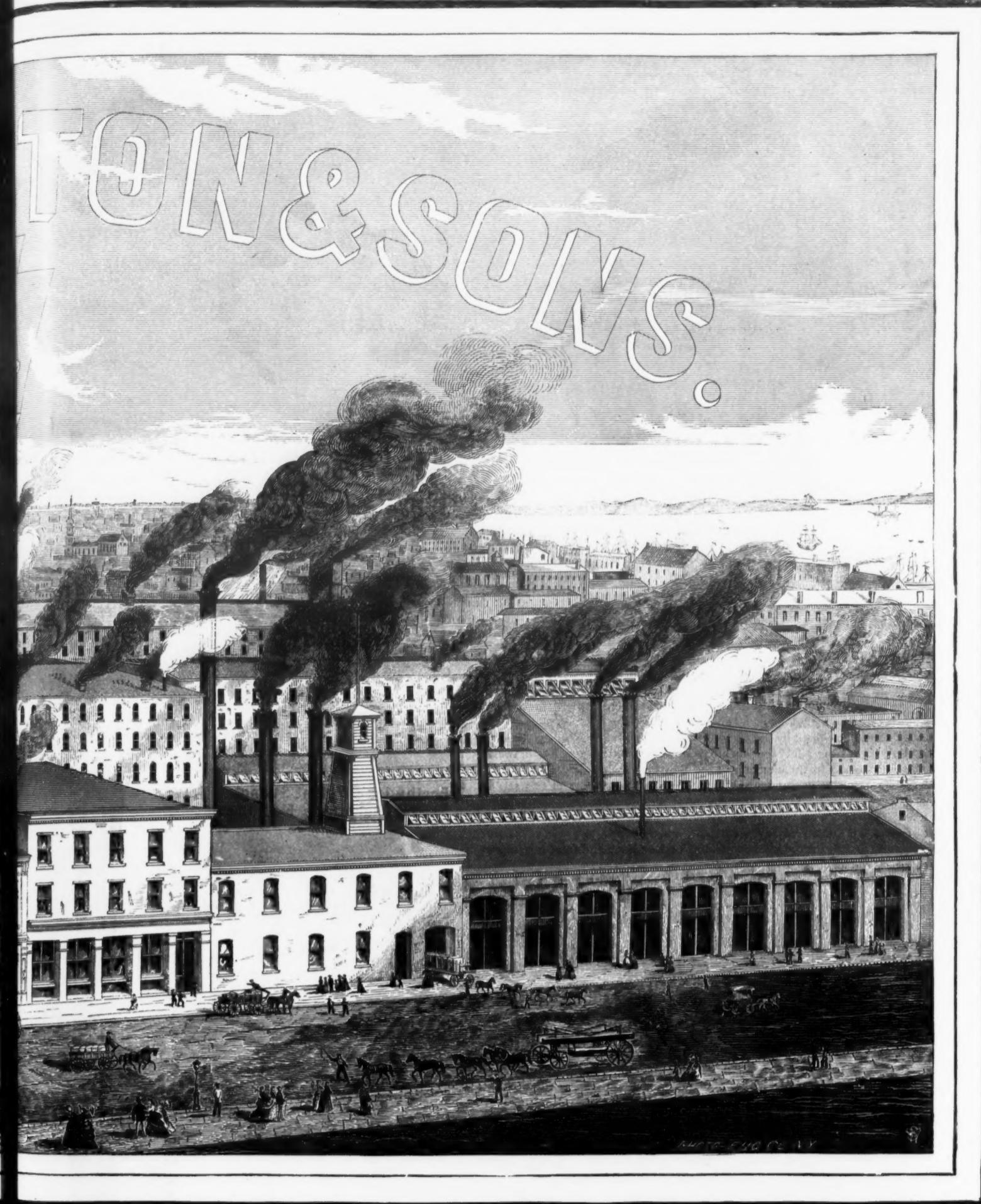


GAUGE SAW, for sawing a definite depth.



MITRE BOX SAW.

Even in price and quality our
Saw. Warranted to give



Y D & SONS'
ew Hand-Saw
N. 7.

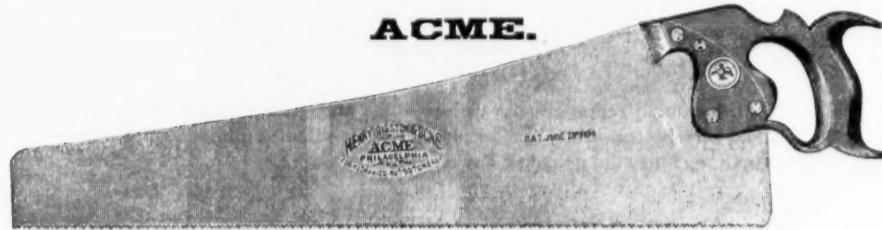


nd qu our celebrated No. 7
to action every time.

late the grinding, temper, and finish of Hand Saws, still in shape and style they much resemble
belives numerous advantages over the old-style Saw, being lighter and more easy to handle,
- who than the ordinary Hand Saw. To these Saws are attached our new patent handles, which
ark, afe of them the blade of the Saw is imbedded in the handle, imparting strength in case of an
eft h give the operator unlimited power and command over the Saw when it is desirable to

HENRY DISSTON & SONS'
New Patent Skew-back Hand-Saw,

ACME.



We consider these Saws to be the ACME of perfection.
So say all first-class Mechanics who have used them.



Mitre Boxes made to order.



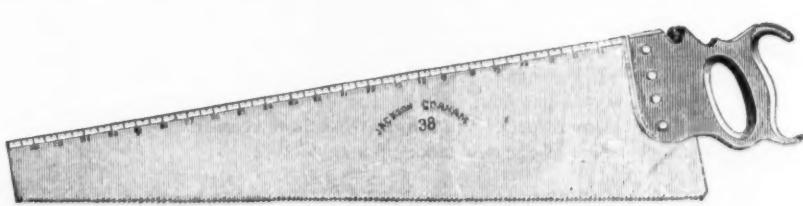
ADJUSTABLE HANDLE HAND SAW.



HORN COMBINATION SAW.



No. 7. HAND SAW.



Any Saw marked "DISSTON" proving defective will be exchanged.

SIDE FILE.

DISSTON'S "STAR" SAW SET.

A is the plunger, which is operated by a treadle attached to E, under the machine; B, the hammer or striking part; C, the anvil; D, the movable gauge; F, the screw, to regulate the amount of set. The striking part and the anvil, or portion which receives the blow, are star-shaped and similar in construction. The points are all of different sizes, and are numbered from 1 to 6; and are designed to set different size teeth. Prominent among its advantages is the fact, that it can be operated wholly by the foot by means of a treadle, thus leaving the hands to guide and manipulate the saw.



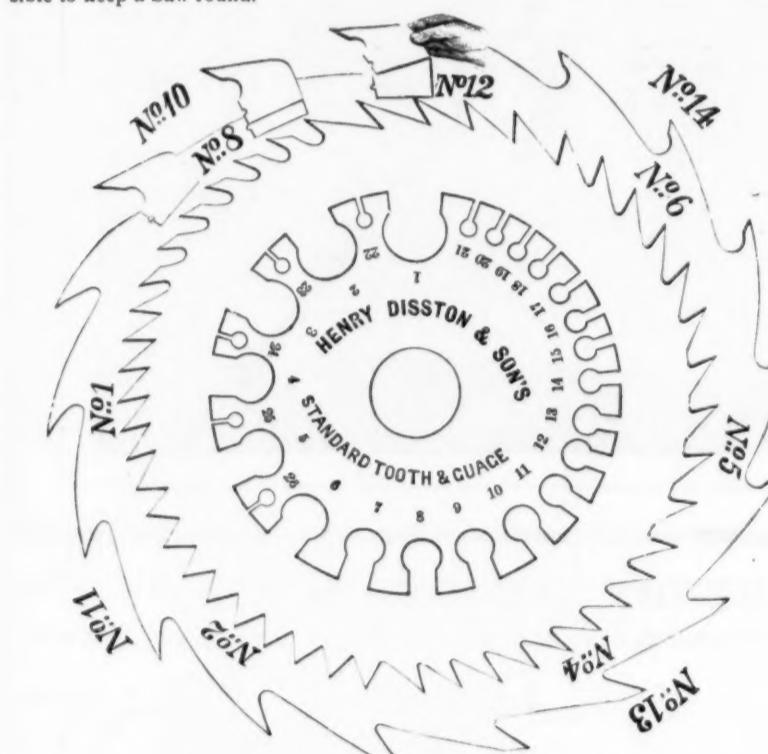
DISSTON'S PATENT GULLET-TOOTH CIRCULAR SAW.



By reference to the above engraving, it will be observed that the back or point line of each Tooth is the continuation of the spiral lines Z, and the sharpening is mainly done by the reduction of the gullet or throat only. This is readily accomplished by the use of our Patent Gummars (see inside pages).

The course pursued by the cutter is spiral, and while it is in the act of reducing the front or throat of the Tooth D, it is prolonging the back or point line of the Tooth C. The engraving represents a two-inch Tooth or Gullet. The Saw B is the Saw A worn down. When the Saw has been reduced on centre line from G to F, it has been worn away but six inches, yet has presented a cutting surface on spiral line Z from G to Y, a distance of twenty-four inches. But this is only one of the advantages claimed for our patent Gullet-Tooth. The throat or gullet being chambered out on a half circle, forms a receptacle or chamber for dust, and thus a one-and-a-half-inch Tooth of this pattern will keep a Saw free from choking as a two-inch Tooth of the ordinary shape.

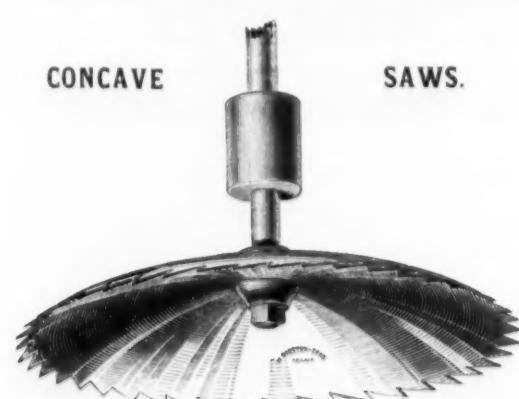
The saving of the Saw-plate by the use of a smaller Tooth is evident to the most casual observer. In wearing a fifty-four-inch Saw down to a forty-two, a loss of twelve inches has been sustained in the diameter of the Saw-Plate, which is six sets of two-inch Teeth, or eight sets of one-and-a-half-inch Teeth, an advantage of two sets in favor of our new patent Gullet-Tooth, independent of the immense gain by gumming on spiral lines. The crowning triumph of this Saw is the fact that it can be kept in order with one-tenth the labor of any other Saw, and is bound to preserve its true circular shape; whereas by the old method of filing both on back and front it is impossible to keep a Saw round.



The above illustration represents our various styles and sizes of Saw Teeth, also our Standard Gauge. By consulting it a person will be enabled to inform us the size and style of Tooth, and also the gauge of any Saw he may desire.

CONCAVE

SAWS.

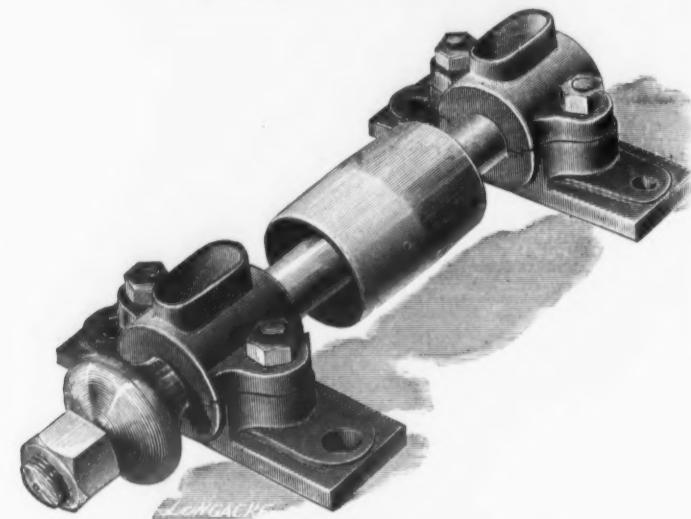


The attention of the manufacturers of chair- or wheelwright-lumber, barrels, etc., is respectfully called to Concave Saws, of which we are manufacturing large quantities. They are dished and tempered by an entirely new and patented process, and guaranteed to be of superior quality in every respect. We furnish these Saws considerably cheaper in consequence of our new mode of manufacture.

THE BULLY BOY SAW SET.



CIRCULAR SAW MANDRELS.

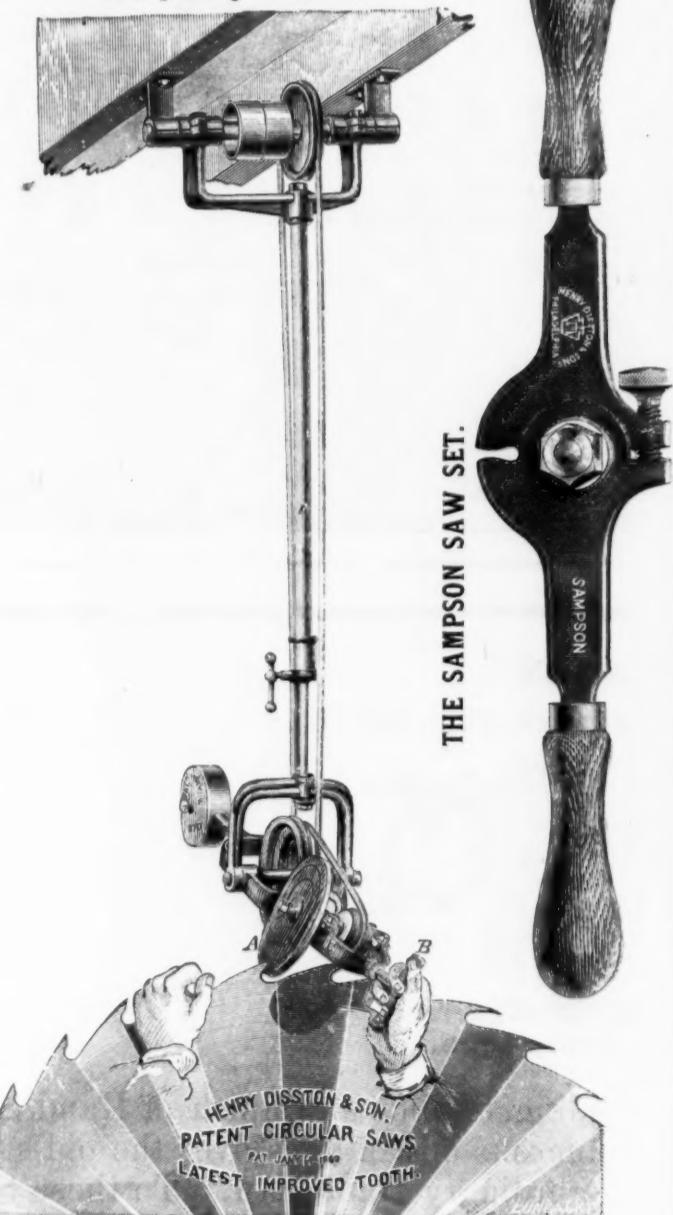


Any Saw marked "DISSTON" proving defective will be exchanged.

AUTOMATIC SAW FILER.



Borthwick's Patent Swinging Saw-Sharpening Machine.



THE SAMPSON SAW SET.

Henry Disston & Sons' Improved Adjustable Setting Stake for Circular Saws.



ATTENTION! HALT!!

IMPORTANT to Hardware Dealers, Lumbermen, and all Parties interested in

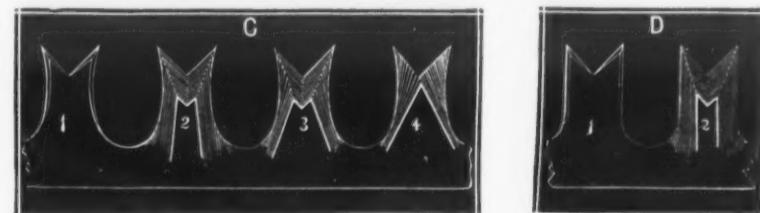
CROSS-CUT SAWs.

We desire to call special attention to our various styles of Cross-cut Saws represented in this week's issue. In the manufacture of all our Fast-Cutting Saws, we have carefully avoided the pernicious and destructive practice of making UNDER-CUT TEETH.

All Saws made on this principle are miserable failures. It is simply applying a Rip Tooth to the purpose of cross-cutting, an idea which has been long ago exploded. To get an UNDER CUT, the Tooth must be wider at the extreme point than at any other part, and each successive filing must result in rapid reduction in the width and ultimate loss of shape, as shown in the annexed diagrams.

No. 1, Fig. C, represents the undercut Tooth as it leaves the factory; Nos. 2, 3, and 4, Fig. C, show how No. 1 must ultimately become under any style of filing that may be adopted. No. 1, Fig. D, shows the shape of said Tooth after several filings. The white lines on the diagrams represent the successive cuts of the file.

On the other hand, the annexed engraving represents a section of "Lumberman" Cross-cut Saw, with File specially adapted for keeping said Saw in order. By using the File here illustrated, with the edge made to fit the gullet or space between the Teeth, and pressing downward while filing, you will preserve the original shape of the Teeth as described by dotted lines and notch in engraving. You pay for the edge of the file as well as the flat —then why not use it? and thus keep your Saw always gummed and in order, and avoid the risk of breaking or buckling the Saw by the old method of gumming. This File is manufactured expressly for the purpose of keeping in order the Teeth of our Improved Saws known as the Climax and Lumberman, and can be used with equal facility on either Saw. If the File be used according to our instructions, viz.: pressing down in the gullet at the same time the edge of the Tooth is being filed, the effect will be so convincing that persons will never return to the use of the old-style File, or any other of the so-called Improved Teeth. We also manufacture a File for keeping the Great American and Climax in order.



Read,
Mark,
Learn.



We guarantee our Cross-cut Saws to do more work, day in and day out, the season through, than any other Saw in the market.

The test of practical experience has been applied, the verdict given,



the flat has gone forth, and the Humbugs are fast fizzling out, while our rapidly-increasing sales testify to the estimation in which these Saws are held.



We pledge ourselves that no effort shall be wanting to keep up the standard and reputation of our manufactures.



The Cleaning-Teeth of all Saws should be somewhat shorter than the Cutting-Teeth, and, although shortened, they should be of uniform length throughout. The inner edge of the Gauge rests on the points of the Cutting-Teeth, the Cleaning-Teeth projecting through the opening in centre of Gauge. Reduce the projecting points by means of a File, until arrested by the edges of the Gauge, which is made of hardened steel. Thus Tooth after Tooth can be rapidly and correctly reduced to an even length by unskilled operator.

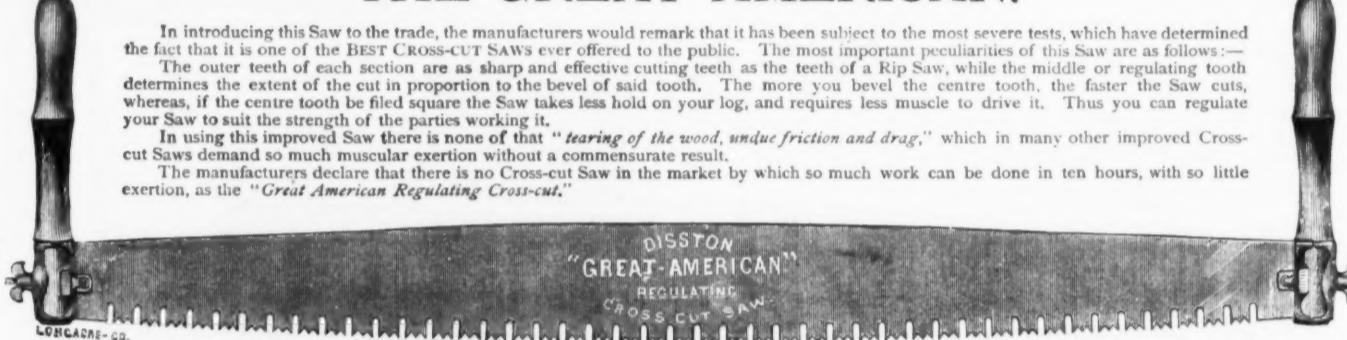
THE GREAT AMERICAN.

In introducing this Saw to the trade, the manufacturers would remark that it has been subject to the most severe tests, which have determined the fact that it is one of the BEST CROSS-CUT SAWs ever offered to the public. The most important peculiarities of this Saw are as follows:—

The outer teeth of each section are as sharp and effective cutting teeth as the teeth of a Rip Saw, while the middle or regulating tooth determines the extent of the cut in proportion to the bevel of said tooth. The more you bevel the centre tooth, the faster the Saw cuts, whereas, if the centre tooth be filed square the Saw takes less hold on your log, and requires less muscle to drive it. Thus you can regulate your Saw to suit the strength of the parties working it.

In using this improved Saw there is none of that "tearing of the wood, undue friction and drag," which in many other improved Cross-cut Saws demand so much muscular exertion without a commensurate result.

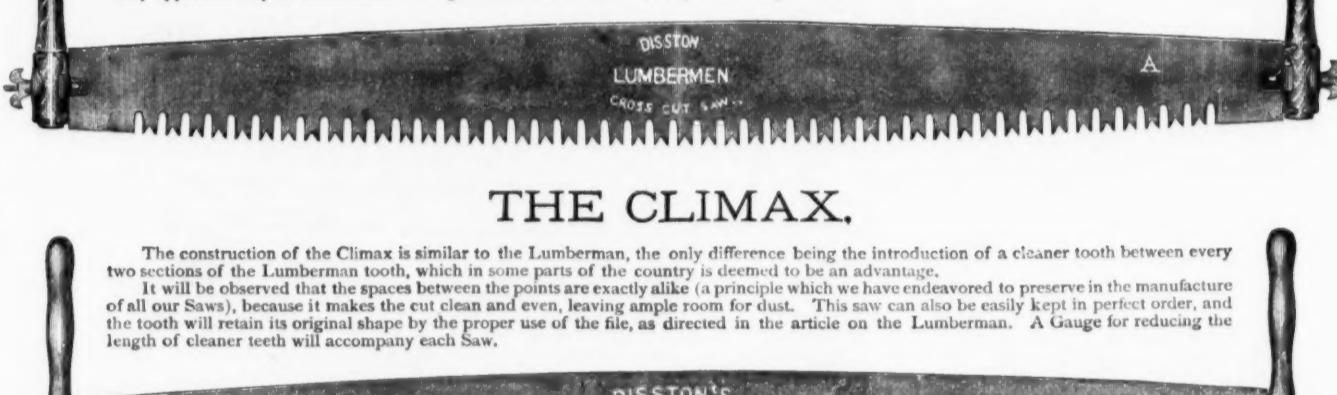
The manufacturers declare that there is no Cross-cut Saw in the market by which so much work can be done in ten hours, with so little exertion, as the "Great American Regulating Cross-cut."



THE LUMBERMAN

Is greatly preferred in some sections of the country, and can be easily kept in order if filed according to directions, when so many of the fast-cutting Saws of the present day must lose their shape and cannot be kept in order.

In filing this Saw, the round edge mill file should be used, and by pressing a little downward as well as sideways you keep the tooth at all times in the same shape it leaves the factory. Attached to the Lumberman and Climax Saws will be found our new patent Cross-cut handle, which is at once the most simple and complete detachable handle now in use. Place the end of the saw blade into the slot in the casting, then drop the pin or rivet into its position, and a few turns of the wing nut secures the handle immovably to the Saw. Although the pin is quite loose when the handle is detached from the Saw, it is by a simple contrivance secured in its place, ready for use,—an advantage which will be fully appreciated by all lumbermen. We guarantee this handle to be superior to any in use.



THE CLIMAX.

The construction of the Climax is similar to the Lumberman, the only difference being the introduction of a cleaner tooth between every two sections of the Lumberman tooth, which in some parts of the country is deemed to be an advantage.

It will be observed that the spaces between the points are exactly alike (a principle which we have endeavored to preserve in the manufacture of all our Saws), because it makes the cut clean and even, leaving ample room for dust. This saw can also be easily kept in perfect order, and the tooth will retain its original shape by the proper use of the file, as directed in the article on the Lumberman. A Gauge for reducing the length of cleaner teeth will accompany each Saw.



THE NONPAREIL.

The Nonpareil, of which the accompanying cut is a representation, is composed of sections of four cutting teeth, each section intersected by a cleaner tooth. It will be observed that the cavities on each side of the cleaner teeth are much larger and deeper than those of the cutting teeth, serving as a receptacle or chamber for dust, and effectually freeing the Saw during the operation of cutting. The cleaner teeth should always be kept shorter or lower than the cutting tooth. (The Gauge, as shown below, is made expressly for this purpose, and by its use the cleaner teeth of any Saw can be regulated and kept of exact length.)

This Saw has given unbounded satisfaction wherever it has been used, and we are constantly receiving orders for the same; in fact, in some sections, and for sawing soft lumber, it is preferred to any other Saw.



DISSTON'S
CLIMAX
CROSS CUT.

"DISSTON" SAWs
ARE WARRANTED.



Showing the Gauge in Position for Filing the Cleaner-Tooth.

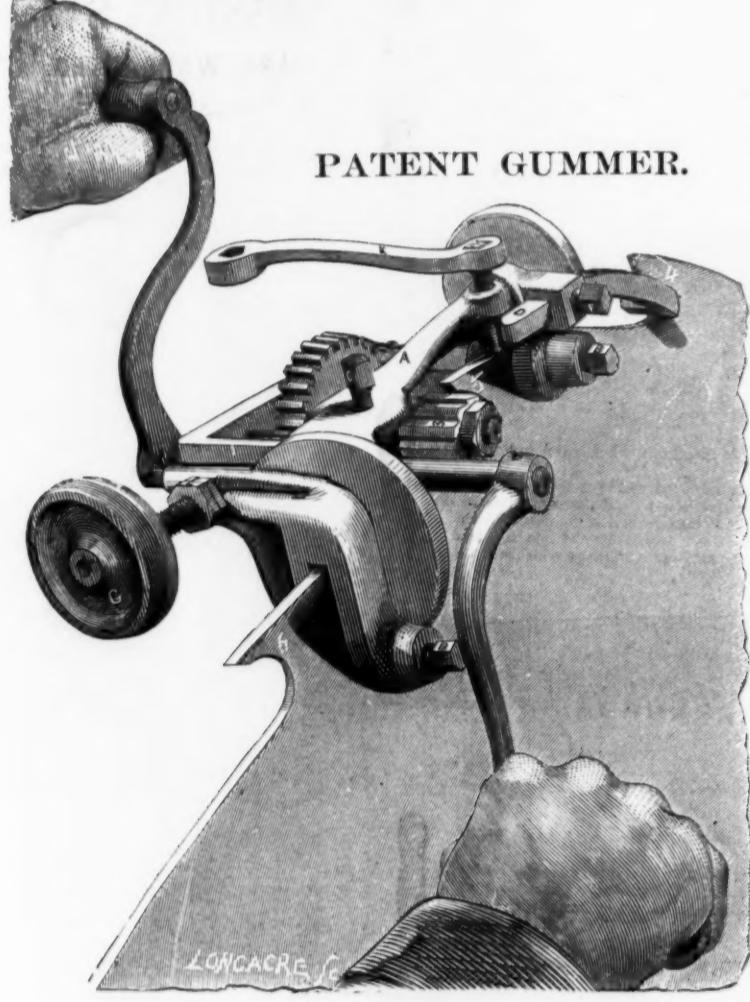
HENRY DISSTON & SONS.

February 4, 1875.

HENRY DISSTON & SONS' SQUARES, BEVELS, GAUGES, Etc.



PATENT GUMMER.



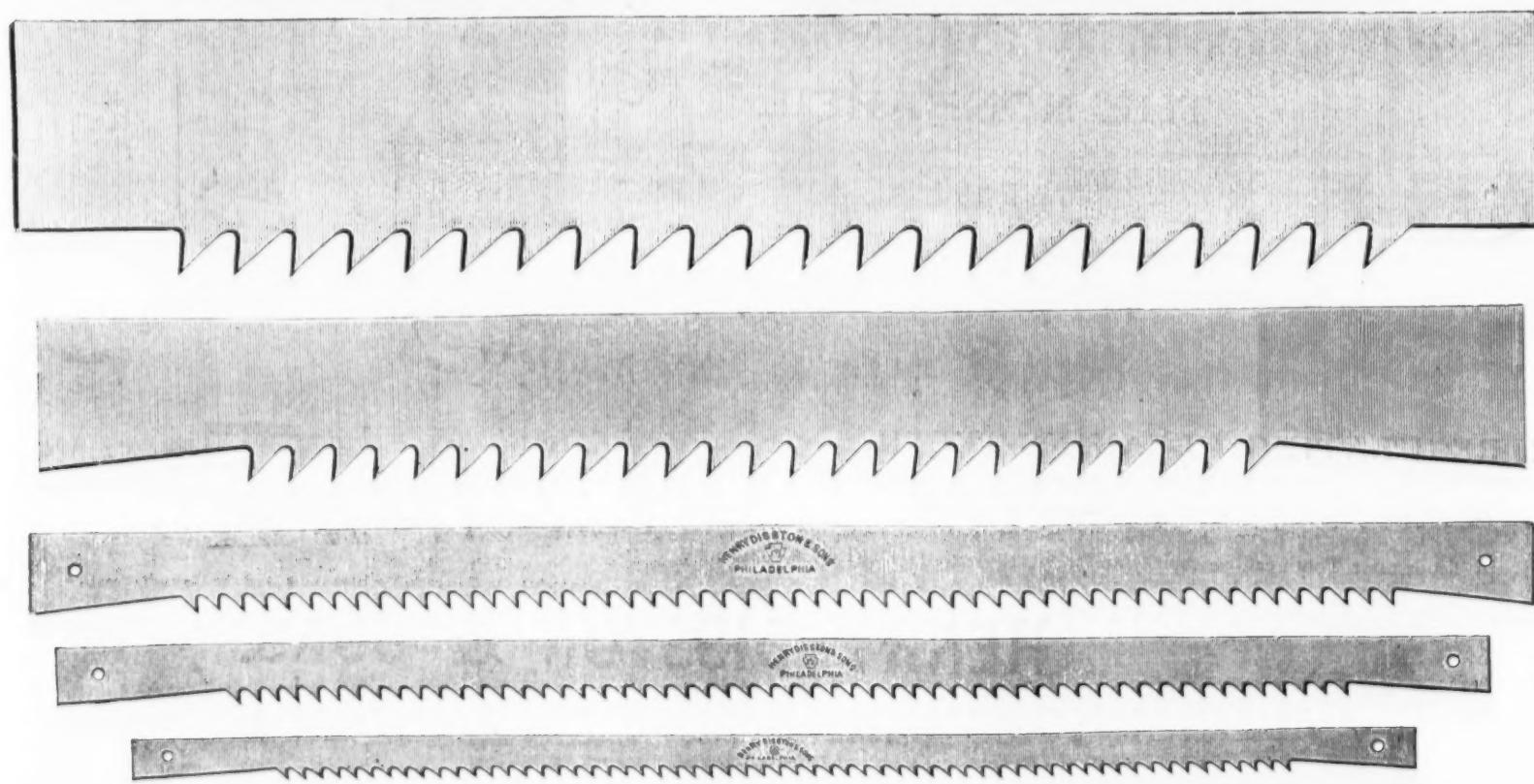
ADJUSTABLE LEVEL.

BARKER'S DOUBLE REVERSE BUTT.



All goods marked "DISSTON" are
fully guaranteed.

POCKET LEVEL



Trade Report.

Office of THE IRON AGE.
WEDNESDAY EVENING, Feb. 3, 1875.

The past week has been without event of great general interest in the financial markets, but the operations have been important. The Secretary of the Treasury on Saturday concluded an arrangement with the Rothschild-Seligman syndicate—enlarged and strengthened by the admission of J. S. Morgan & Co., of London—by which the syndicate took \$25,000,000 of new fives “firm,” and have a six months’ call on the unsold remainder of this class of bonds. In pursuance of this contract, the Secretary of the Treasury on Monday called in \$15,000,000 of five twenties, interest to cease May 1. Of this amount, \$12,000,000 are coupon bonds and \$3,000,000 registered bonds, numbered as follows: Coupon bonds of \$50, No. 4662 to 8300; coupon bonds of \$100, No. 10,501 to 23,100; \$500, No. 7001 to 11,100; \$1000, No. 20,001 to 33,700. Registered bonds of \$50, No. 1821 to 2000; \$100, No. 14,151 to 15,550; \$500, No. 8071 to 8650; \$1000, No. 33,351 to 35,700; \$5000, No. 10,261 to 11,600; \$10,000, No. 13,201 to 15,500.

The money market continues very easy, 3 @ 3 per cent. being the rates to borrowers on call. Mercantile paper is fairly quotable at 4 @ 6 per cent. for prime.

The gold market has been strong, and the premium has advanced several points above the average of last week. On Monday considerable excitement was caused by an advance to 114 1/2, and it is predicted that 120 will be reached before the market again weakens. There are several reasons for this, which may be briefly summarized as follows: The Treasury balances are exceptionally low; the premium offered by the German government, with a view of inducing an inflow of gold, makes it profitable to ship gold to Europe, and recent shipments have been very heavy; the merchants are using large quantities of gold to take goods out of bond, in anticipation of the approval of the “Little Tariff Act”; and, lastly, speculators are taking advantage of the opportunity to corner cash gold. The following shows the daily range of the premium:

	Highest.	Lowest.
Thursday...	113 1/2	112 1/2
Friday...	113 1/2	113
Saturday...	113 1/2	112 1/2
Monday...	113 1/2	113 1/2
Tuesday...	114 1/2	113 1/2
Wednesday...	113 1/2	114 1/2

The stock market was unsettled and feverish last week, but on Friday the bears changed their tactics and became speculative buyers to a considerable extent. Their purchases gave new strength to the market, and an advance was thus brought about, which has been well maintained. The principal dealings have been in Western Union, Lake Shore, Northwest, Union Pacific, Ohio and Mississippi, St. Paul and Pacific Mail. The highest and lowest of to-day’s quotations of active shares are given below.

Government bonds have been strong, with an upward tendency. We give below the quotations of governments at the close of business to-day.

State bonds have improved and railroad mortgages are strong and in good demand.

The following tables show the foreign trade movements for the week:

	IMPORTS.	EXPORTS.
Total for week.	\$9,651,598	\$5,883,972
Prev. reported.	26,736,639	19,761,625
Since Jan. 1.	...\$36,398,267	\$25,615,597
		\$25,688,137

Included in the imports of general merchandise for the week are:

	Quant.	Value.
Brass goods...	8	\$1,826
Bronze...	10	1,058
Cables and anchors	101	6,960
Copper...	965	1,000
Cutlery...	133	59,096
Guns...	81	3,021
Hardware...	65	7,075
Iron, pig, tons...	511	21,619
Iron, sheet tons...	36	4,600
Iron castings...	1,307	3,806
Iron tubes...	263	11,977
Iron, other, tons...	800	5,058
Lead, pig...	169	20,718
Metal goods...	9	1,178
Nails...	16	4,997
Needles...	107	107
Old metal...	9	7,878
Pistols...	12	2,100
Saddlery...	3	889
Steel...	2,631	28,307
Silverware...	1	106
Tin, boxes...	13,933	120,038
Tin, 420 slabs...	190,421	40,879
Wire...	582	8,729

EXPORTS OF SPECIES.

	Quant.	Value.
Total for the week.	1,577,445	\$7,626,858
Previously reported.		
Total since January 1, 1875.	...\$9,304,323	
Same time in 1874.	2,347,543	
Same time in 1873.	6,570,812	
Same time in 1872.	1,495,321	

Government bonds closed as follows:

	Bid.	Asked.
U. S. Currency 6%...	119 1/2	121
U. S. 6% 1881, reg...	119	120
U. S. 6% 1881, cou...	120 1/2	130 1/2
U. S. 5-20 1862, cou...	116 1/2	116 1/2
U. S. 5-20 1864, reg...	117 1/2	118
U. S. 5-20 1864, cou...	118	118 1/2
U. S. 5-20 1865, reg...	119 1/2	119 1/2
U. S. 5-20 1865, cou...	120	120 1/2
U. S. 5-20 1867, cou...	120 1/2	121 1/2
U. S. 5-20 1867, cou...	121	120 1/2
U. S. 5-20 1867, cou...	120 1/2	121 1/2
U. S. 10-40 1864, cou...	114 1/2	114 1/2
U. S. 10-40 1864, cou...	117 1/2	117 1/2
U. S. 5-1881, reg...	115 1/2	115 1/2
U. S. 5-1881, cou...	115 1/2	115 1/2

The following were the highest and lowest prices of stocks to-day:

	Highest.	Lowest.
N. Y. Cen. & Hudson Consolidated	102 1/2	101 1/2
Lake Shore...	75 1/2	74 1/2
Rock Island...	105 1/2	104 1/2
New Jersey Central...	107 1/2	107 1/2
Michigan Central...	78 1/2	75
Illinoian Central...	102 1/2	102
Western Union Telegraph...	127 1/2	126 1/2
Atlantic and Pacific Telegraph...	21	24
Northwestern...	45 1/2	44 1/2
“ Prof.”...	50 1/2	50
Milwaukee & St. Paul...	37 1/2	37 1/2
Pacific Mail...	58 1/2	57 1/2
	37 1/2	39

Erie...	29 1/2	29 1/2
Ohio & Mississippi...	29 1/2	28 1/2
Union Pacific...	41	39
C. C. & Ind. Central...	87 1/2	87 1/2
Hannibal & St. Joseph...	22 1/2	21 1/2
Wells, Fargo & Co. Express...	84	84
United States Express...	59 1/2	58

GENERAL HARDWARE.

Trade is decidedly good this week in some of our city houses, while others are complaining. The indications of a fair business this spring seem to be good; and it is the general opinion of well-informed merchants that the financial condition of the Hardware trade all over the country is sound—probably more so now than at any recent period. Changes in prices have not yet been numerous, and goods are generally selling at last season’s prices. There is more irregularity in the price of Table Cutlery than in any other staple article. The combination which, with various vicissitudes, existed so long, is at present utterly demoralized, each company acting entirely independent of the others. The Meriden Cutlery Company have resumed the use of list prices and discounts (as printed in our issue of January 21st), but the others still adhere to the system of net prices. When they adopted this plan of selling, it was expected to result in profit, both to themselves and to the jobbing trade. The trial of it has shown that the manufacturers have not gained by it, while the jobbing trade of this city, at least, have found it both unpleasant and unprofitable. We believe it was never expected to be popular with the retail trade.

The Lock Association met yesterday and made an advance of 25 cents and 50 cents per dozen on the following Door Knobs: 2 1/4 inch Mineral, with japanned mountings, now \$2.25 per dozen; 2 1/4 inch Porcelain, japanned mountings, \$3 per dozen; 2 1/4 inch Porcelain, plated mountings, \$7 per dozen; 2 1/4 inch Porcelain, Porcelain Roses, \$7.50 per dozen. No change was made in discounts or terms.

The difficulty about the price of Rowland’s Shovels and Spades has been settled, as is shown by the following circular issued by Lloyd, Supplee & Walton:

PHILADELPHIA, Jan. 30th, 1875.

The “Rowlands” having signed the contract, Jan. 29, 1875, making the discount upon their goods 25 per cent., we this day make our price upon Rowlands’ Shovels, Spades and Scoops, 25 per cent. discount. All orders for Rowlands’ goods reaching us by Feb. 1st will be filled as per our circular Jan. 23, 1875. So-litigating orders, we remain, Yours, truly,

LLOYD, SUPPLEE & WALTON.

We reduce our quotations of Wire to the following prices:

Bright and Annealed....	Nos. 0 @ 18	dis. 45 @ 47 1/2
“	19	26 1/2
“	20	35 1/2
Coppered.....	0 @ 18	dis. 40 @ 42 1/2
Galvanized, Nos. 0 @ 6	84	9 1/2 per lb. net.
“ 7 @ 18...	market list.	10 @ 12 1/2
Tinned...	“	25 @ 30
Cast Steel...	“	15 @ 20
Tinned Broom Ware...	30	9 1/2 35 1/2
Galvanized Telegraph, Nos. 8 and 9...	10 and 11	10 @ 12 1/2
“ 10 and 11...	12	10 @ 11 1/2
Annealed Fence, Nos. 8 and 9...	dis. 45 @ 50 1/2	10 @ 12 1/2
“ Grape...	10 to 14	45 @ 50 @ 50 1/2
Fence Staples...	“	10 @ 7 1/2

These Pruners are furnished with poles, four, six, eight and ten feet long, and in case of breakage extra parts will be supplied. The following, which is the retail price, is for such an indispensable implement to all fruit growers, sufficiently low to warrant their general use:

Length of pole, 4 feet. Weight, 21 lbs. \$2.50

“ 6 “ 24 “ 24 “

“ 8 “ 30 “ 30 “</

THE LABOR MARKET

elsewhere is still feverish and unsettled. The following are items: North country blast furnaces reduced 10 per cent. (10,000 men); Cleveland iron miners, 12½ per cent. (8000 men) reduction; West Cumberland miners on strike (2000); Jarrow chemical workmen (2000), drop of 15 per cent.; Durham miners to be reduced 10 per cent. (40,000 men or thereabouts); Tyne and Wear shipbuilders (8000) resist reductions of 10 and 15 per cent., on time and piece wages; Northumbrian miners (20,000) threaten not to accept the drop of 20 and 16 per cent., on soft and steam coal respectively; with many minor disputes and lockouts of engineers, fitters, smiths, &c., at Sheffield, Barrow, and elsewhere.

THE TRADE'S CONGRESS.

The annual congress of the trade's unions commenced this morning at Liverpool. There is a very large attendance of delegates from all parts of the Kingdom, but the chief business to-day is the presentation of credentials. Several interesting subjects will come up for discussion during the week.

EXPORTS OF COAL FROM LIVERPOOL.

At a meeting of the Mersey Harbor and Dock's Board, held in Liverpool the other day, Mr. Forwood, one of the members, submitted returns giving particulars of the coal traffic at Liverpool. He did this in the following terms: "It appeared that whilst in 1862 the quantity of water-borne coal shipped at Liverpool and Birkenhead was 319,000 tons—namely, 268,000 tons at Birkenhead and 51,000 tons at Liverpool—the quantity shipped in 1874 was 1,040,000 tons at Birkenhead and 395,000 tons at Liverpool, making a total of 1,435,000 tons. The average quantity of coal shipped at Birkenhead from 1862 to 1866 was 400,000 tons per annum, and during the last four years the shipments at Birkenhead averaged 885,000 tons per annum, and at Liverpool 397,000 tons, making a total average of 1,282,000 tons. The total quantity shipped at Liverpool and Birkenhead from 1862 to 1866 was 540,000 tons. No trade had grown more rapidly, nor was there a trade more important to Liverpool. It had been stated that the board had not provided many new appliances during the last few years. Well, in 1868 the board provided two new tips, and in 1871 they added appliances of the very best character, capable of working 500,000 tons. There was a great prejudice against shipping coal by machinery, on the ground that the coal was broken by this mode of shipment. In 1862, 196,000 tons were shipped by hand, and only 12,000 tons by machinery, whilst in 1874 there were shipped by hand 230,000 tons, and 636,000 by machinery. Those figures showed a diminution of hand work, and that the shipment of coals by machinery was due entirely to the cessation of the prejudice that the machinery injured the coal. During the year, 4000 coal carts had been in the river, and the board had received scarcely any dues from them. He was sorry to say that, unless the board took in hand some of the coal docks, the trade must soon come to a standstill. He believed that the only panacea for all the evils under which Birkenhead and Liverpool labored was the construction of the Mersey tunnel."

THE SCOTCH PIG IRON TRADE.

There has not been much business doing in warrants at Glasgow since the general resumption after the New Year's holidays. Prices have continued weak in consequence, and are now a couple of shillings lower than on the 1st inst. Makers' figures, on the other hand, have stiffened a little in several special instances—Celtic and Gartsherrie to wit, as samples. The total stock in Connal's stores now stands at 36,211 tons, against 40,886 at this time last year. There are 118 furnaces in blast—five less than at the corresponding period of 1874. Pig iron for ballast still stands at 60/- per ton, and is not likely to be changed under the present aspect of affairs. Freights to New York are still 5/-, and to Boston 10/-, from Glasgow.

Writing on January 16th, Messrs. James Watson & Co. (Glasgow) say: "The market opened this week at 75/9, and gradually receded till 73/9 was touched on Wednesday, when a temporary improvement took place, but price has since given way, and closes this afternoon at 73/6. Shipments last week were 9139 tons, against 6458 tons in the corresponding week of 1874.

No. 1. No. 8.
G. M. B., at Glasgow..... 76 6 74 6
Gartsherrie..... 91 7 77 6
Coltress..... 92 6 79 6
Summerlee..... 87 6 78 9
Langloan..... 90 6 79 6
Carnbroe..... 87 7 78 6
Calder, at Port Dundas..... 90 6 76 6
Glengarnock, at Ardrossan..... 88 7 78 6
Eglinton..... 77 75
Dalmellington..... 81 6 77 6
Shotts, at Leith..... 90 6 79 6
Kinnel, at Bo'ness..... 85 6 73 6

Messrs. John E. Swan & Bro.'s (limited) prices current of the same place and date has following information:

Glasgow Brads.	Furnaces			B. Wng.			Prices.		
	Furnaces	B. Wng.	118	Furnaces	B. Wng.	Out 38	Furnaces	B. Wng.	Out 38
Gartsherrie.....	11	5	16	91/6	77/	..			
Coltress.....	12	0	12	92/6	79/	..			
Summerlee.....	6	7	8	87/6	78/	..			
Langloan.....	7	1	9	92/6	77/	..			
Govan.....	4	1	8	76/	74/	..			
Calder.....	6	2	8	90/	75/	..			
Shotts, at Ardrossan.....	5	2	7	92/6	87/6	..			
Carnbroe.....	4	2	6	90/	79/	..			
Wishaw.....	2	1	3	86/6	77/	..			
Monkland.....	6	3	9	76/	74/	..			
Chapchall.....	6	0	6	76/	74/	..			
Quarter-Clyde.....	4	1	5	76/	74/	..			

* f. o. b. Glasgow, 1/- per ton, extra.

Glasgow Warrants, 3½ No. 1; 2½ No. 3, g. m. b., 73/6.

WEST COAST BRANDS—f. o. b. Ardrossan.

Glenarnock.....	7	2	9	87/6	78/	80/
Ardrossan.....	4	1	5	87/6	78/	80/
Eglinton.....	6	2	8	87/6	78/	80/
Brand's, at Ardrossan.....	4	0	4	87/6	78/	80/
Muirkrich.....	3	0	3	77/	75/	78/
Portland.....	3	3	6	77/	75/	78/
Dalmellington.....	6	2	8	81/	77/	74/

EAST COAST BRANDS—f. o. b. in the Forth.

Kinnel.....	3	1	4	85/	73/	72/6
Almond.....	2	1	3	77/6	73/	..
Caron, f. o. b. Ardrossan.....	5	1	6	90/	77/6	..
Loughgelly.....	2	2	4	77/6	75/	78/
Cummingham.....	0	4	6	77/6	75/	70/
Bridges.....	0	12	2	77/6	75/	70/

ANOTHER BANKRUPT IRON COMPANY.

The North of England Hematite Iron Company, lately, however, known as the Lowther Hematite Iron Company, carrying on business at Workington, in Cumberland, has become impotent, and was the subject of an examination at Glasgow last week. Mr. David Dohy, one of the proprietors, stated that the liabilities amounted to £124,989, and assets, £118,834, showing a deficiency of £6,155. He estimated the value of the works at £80,000, being £30,000 less than they are. He was also individually liable to Barclay & Sons for £15,000. He had at-

ranged to offer 20/- in the pound, but the arrangement had fallen through, the name of the firm having been changed, to prevent the quality and character of the iron being mistaken, it being better than the run of iron in the North of England. A further examination will shortly take place.

UNFORTUNATE CO-OPERATIVE IRON WORKS.

Co-operation in the iron trade does not appear to be an unmixed success, if we may judge by the reports issued from time to time. Thus, for instance, the North of England Industrial Iron and Coal Company have just furnished the shareholders a report in which it is depicted that they are again unable to declare a dividend. This unpleasant state of things appear to lay to the charge of the Danks' patent puddling furnace, and the general stagnation of trade. To quote the report: "The company has blast furnaces, with a number of converted Danks' patent puddling furnaces, and a plate mill in course of erection at Carlton, and coal mines at East Howle, in the county of Durham, and ironstone mines at Aylesbury and South Belmont, in two different parts of Cleveland. Although the doom over-shadowing the iron trade has now extended to the coal trade, and different branches of business, the prospects of the company have much brightened of late, there now being a profit on the working of each department of business, and a prospect of increased prosperity on account of the more favorable price of raw material. The Hutton seam of coal, at East Howle colliery, has proved of excellent quality for household purposes, and the output of 200 tons per day meets ready sale; but additional capital is required to provide more house accommodation for the men, so as to increase the output and reduce the cost of production. The alteration and adaptation of the unprofitable Danks' puddling machine to Mr. Crampston's patent system of heating is completed, a satisfactory trial of the machinery has been made, and the directors are sanguine of producing high-class iron from Cleveland pig. The whole of the foundations of the new plate mill are in, and most of the heavy machinery ready for erection, and it is expected this department will largely contribute to the prosperity of the company. Until recently, a loss has occurred from the working of the blast furnaces, in consequence of a serious deterioration in the quality of South Belmont ironstone, and the use of this stone will be abandoned at the close of the year, unless the royalty rent is altered to suit the altered circumstances of the stone. At Aylesbury mines a profitable return is made on the capital invested." The company also propose to issue £50,000 of new shares, to bear interest preferentially at the high rate of 10 per cent.

NORTH OF ENGLAND QUARTERLY MEETING.

The quarterly meeting of the Cleveland and North of England iron trade was held at Midlothian on Tuesday last. There was a good attendance. The tone of the market was decidedly weaker, but there was no reduction in prices. Very little iron changed hands. The rail iron trade continued excessively dull. Rather more was done in plates.

TRADE OF SHEFFIELD.

There is very little alteration to report in connection with any branch of the iron and steel trades. Generally speaking, there is a dull feeling in every branch of these industries, and no great amount of work is being turned out. The armor plate mills, forges and shops, continue to be well employed, and appear likely to remain so for almost any length of time. The Portuguese government has just ordered an armor plated frigate from the Thames Iron Works Company at a cost of £126,000 exclusive of machinery, and the Admiralty have contracted with two Clyde firms for two new armor plated vessels—so that a good deal of work would appear to be in store for this department of the two firms in the trade here.

There have been several transactions in pig iron during the past week, chiefly, however, in best forge and general foundry numbers. Hematite brands are held at about the following figures: Maryport: "Bessemer" qualities, No. 1, 95/-; No. 2, 95/-; No. 3, 95/-; No. 4, 90/-; and W. 90/-; "Bessemer," No. 1, 100/-; No. 2, 97/6; and 3, 95/- per ton, with the usual allowance for prompt cash. Millom: "Bessemer," No. 1, 95/-; No. 2, 92/6; and No. 3, 90/-; Millom: "ordinary," No. 3, 90/-; No. 4, 89/6; No. 5, 87/6; M. and W. 105/- It is stated, however, that these figures can be considerably shaded by purchasers who are willing and able to take heavy lots or buy a little forward. Cleveland brands are easier on the average, No. 1 being 65/-, and No. 3, 63/- per ton.

The returns giving details of the coal traffic

during the year 1874 from Yorkshire and Derbyshire are now complete, but do not show to advantage as compared with the two preceding years. The total tonnage of coal from all districts by rail to London during last year was 4,689,766 tons, as against 5,147,413 in 1873, and 4,909,268 in 1872. Of the first given total the Midland carried 1,588,301; the London and Northwestern, 902,533; Great Northern, 872,646; and Great Eastern, 663,015 tons. The Great Northern alone thus fell off over 160,000 tons last year, the falling off being equally spread over the South and West Yorkshire colliery districts. During November, however, the Great Northern increased 29,000, and in December, 10,000 tons. The totals for the single month of December were: Midland, 138,758; London and Northwestern, 79,758; Great Northern, 108,217; and Great Eastern, 67,223 tons. The increase over the Great Northern principally originated with the South Yorkshire pits. The Derbyshire pits maintained their metropolitan connections very well during the year; Cross-Cross certainly sent 16,000 tons less than in 1873, but Langley Hill increased 27,000 tons, these two collieries having dispatched 507,000 tons to London within the twelve months.

The Board of Trade returns just issued for the past year, show the great extent to which our transactions in hardware and cutlery with the United States have fallen off during that period, but they also demonstrate very clearly the encouraging amount of business which we are doing with Australia, New Zealand, and other of the large colonies. On Tuesday a meeting of the riparian proprietors, mill owners and sundry public bodies interested in the river Don, was held at Sheffield, in order to consider the provisions sought to be put in force by the proposed River Don Protection Bill. This bill seeks to prevent the depositing of mechanical obstructions in the stream, with powers to fine persons placing or causing such obstructions. It was stated that a staff of 30 men was constantly engaged in dredging the river at Tinsley, and that, if they relaxed their efforts for a few days, the bed became silted up. There were also 5 parts out of 100 of mineral matter held in suspension by the water—a much greater proportion than by the Irwell below Manchester, the Aire below Leeds, or the Clyde below Glasgow. It was resolved, after some discussion, to send a deputation to the Home Secretary, to invite the government to act thereon (the meeting) in carrying out the objects of the bill by some general government measure.

The Sheffield branch of the Amalgamated Engineers' Society have decided to have lectures given to the members on the various higher branches of the business, including some on many interesting technical details and theoretical subjects.

It would appear to be practically impossible to incite upon miners and other under-

ground workers in collieries, the great necessity that exists for the use of naked lights being abandoned. An instance very forcibly illustrating this fact is supplied by a case which came before the Barnsley magistrates last week, only a few days after the second great explosion in this locality. In this case a number of men employed at the Darton Hall Colliery of Messrs. Thorp were summoned under the Masters and Servants Act for leaving work because they were required, at short notice, to work with lamps. The pit had previously been worked partly with naked lights, but a little gas having been detected, the management issued an order requiring nothing but lamps to be used. The men would not accede to this, unless they were paid at a higher rate! The bench ordered two of the defendants to pay 10/- each as compensation, and annulled the contracts, dismissing the cases against the other men.

The under noted are Messrs. Smith & Owens' prices of Swedish charcoal iron and steel: "Swedish Charcoal Iron, &c.—To arrive from Sweden.—Rolled horse nail rods, ordinary sizes, £17/- ditto, rounds, £17. 10/- ditto, bar iron, ordinary sizes, 13-16 inch to 2 inch squares, 1 7-16 to 5 inch wide by 5-16 inch thick, or thicker, flats, £16. 10/- hammered bar iron, ordinary sizes, 5½ inch to 2 inch squares, 1 7-16 to 5 inch wide by 7-16, 1½ and 2½ inch, also 1½ by 1½ and 1½ by 5½ inch flats, £17. 10/- ditto, superior quality for machine purposes, £18. 10/- ditto, short bar, 3 inch by ½ inch (80 to 90 bars per ton), £16. 5/- ditto, 2½ inch by ½ inch, £16. 5/- ditto, (Brands suitable for Mediterranean markets). Keg steel, hammered, £20. 10/- ditto, rolled, £20/- blooms, £11. 10/- ditto, £14. 10/- per cwt, English. Above prices ex-ship, Thames and Hull

HURD'S AXES

HURD'S RAZOR BLADE AXES
MANUFACTURED FROM THE
BEST ENGLISH EXTRA
CAST STEEL
BY THE
JOHNSONVILLE
AXE MFG.
CO.

TOOLS

LANE, GALE & CO.
TROY, N.Y.



Wrought Iron Tackle Blocks,

FOR ROPE OR CHAIN.



Patent Self-Sustaining Rope Pulley Blocks.
Same as the ordinary block, but suspends the weight at any point.

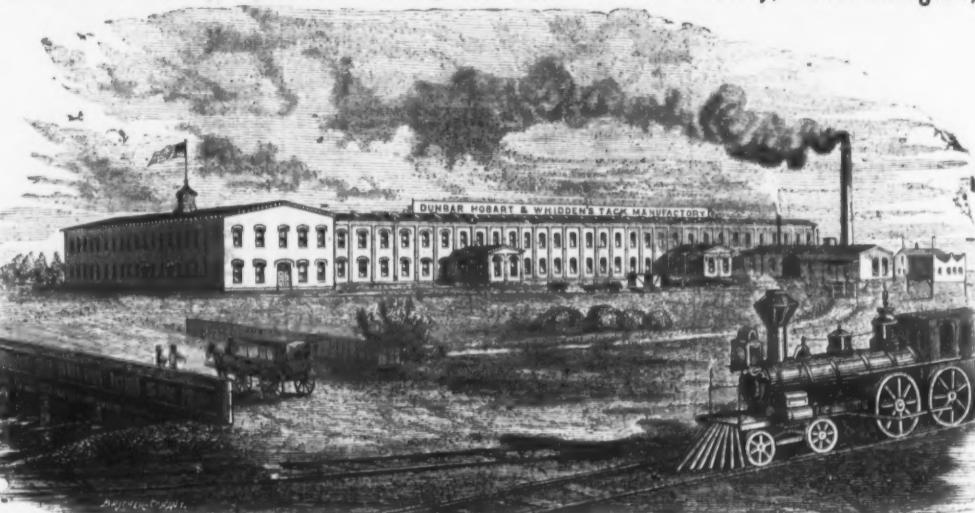
Weston's Patent Differential Pulley Blocks.
Made from $\frac{1}{4}$ ton size to 10 tons.

VAN WART & McCLOY, Sole Agents, 43 Chambers Street, N.Y.

HOBART'S TACKS.

MANUFACTURED BY
DUNBAR, HOBART & WHIDDEN,
Established 1810.

Office and Salesroom, 116 Chambers Street, New York
Factory, South Abington, Mass.



MANUFACTURERS OF

American, Swedes and Copper Tacks,

Tinned, Leathered and Large Head Carpet Tacks, Finishing Nails, Black and Tinned Trunk Nails, Miners', Gimp, Lace and Brush Tacks, Hungarian, Chair, Cigar Box and Barrel Nails, Glaziers' Points, IRON, STEEL, COPPER, ZINC AND BRASS SHOE NAILS,

Heel and Toe Plates, Steel Shanks, and Fancy Head Nails, Silver or Japanned Lining and Saddle Nails.

A full assortment always on hand at salesrooms, for immediate delivery if required. Odd and irregular sizes made to order or cut from sample at short notice. Send for Price List.

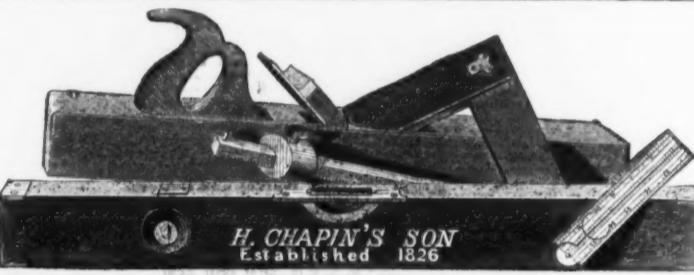
RIEHLER BROTHERS,
Ninth Street, near Coates, Philadelphia.
New York Store, 93 Liberty Street.
Pittsburgh Store, 235 Liberty Street



"Patented" Furnace Charging Scale,
Double Beam R. R. Track Scales, Compound Parallel Crane Beams, &c. Patented First Paver Lever Wagon Scales. Testing Machines any capacity.



STEAM GOVERNOR
WARRANTED BEST IN USE.
HOBART GOVERNOR CO. LAWRENCE MASS.



H. CHAPIN'S SON
Established 1826

Manufacturer of
Rules, Planes, Iron Planes, Grooving Plows, Gauges, Plumbs and Levels, Hand Screws, Bench Screws, Handles, Door Stops, Try Squares, Sliding T Bevels, Turning Saw Frames and Saws, Schell's Patent Gauge, Butler's Patent Gauge, Boring Machines, &c., &c.
Illustrated Catalogues of 1874 furnished on application. Address,

H. CHAPIN'S SON Pine Meadow Conn.



Geo. D. Lord, Pres.
Geo. Parling, Secy.

FOR OPENING
TIN PACKAGES OF
FISH, OYSTERS,
FRUIT, & VEGETABLES.

MANUFACTURED BY THE

**Sprague Can Opener Co.,
ROCHESTER, N. Y.**

W. R. Seward, TREAS.
A. V. M. Sprague, Secy.
IT SHEARS CLEAN,
LEAVING NO RAGGED EDGES.
EASILY OPERATED,
ALWAYS IN ORDER.

Depot for New York City Delivery, with UNION HARDWARE CO., 120 Chambers, and 50 Warren Street.

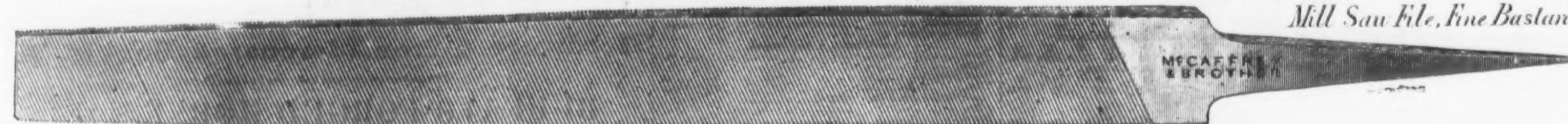
New York Wholesale Prices, February 3, 1875.

HARDWARE.

Avails.	\$14	
Solid Cast Steel.		
Wright's "B" W. gold ilidge; over 250 lbs. lde. gold		
Wilson's Mouse Hole		
Nilson's		
Eagle Anvils.		
Apple Pe. Fr.		
Domestic		
Circular Table.		
Lightning.		
Gibson's.		
Huntington.		
Lam.		
Skeleton Paring, Coring and Slicing.		
Turn Table, old style.	\$75 75 10%	
Bx. State, Paring, Coring and Slicing.	\$15 00 10%	
Lif. Jax Slicer.	8.00	
Augers and Bits.		
Douglas.		
Ives.		
Bachert French, Swift & Co.	1st quality.	
	dis 40%	
	2d quality.	dis 40%
Andrews' Bits.		
" Augers.		
Expansive Bits, Clark's.	\$15 (\$25) dis 15%	
" Ives.	\$20 (\$30) dis 20%	
" Blake's.	\$21 (\$35) dis 20%	
Hollow Augers, Douglas'.	\$26 (\$35) dis 25%	
" " ".	\$26 (\$35) dis 25%	
French, Swift & Co.	\$26 (\$35) dis 25%	
" Bonney's Adjustable.	\$26 (\$35) dis 25%	
" Ives' Expansive.	each \$4.50 - dis 40%	
" Cushman's Expansive.	dis 20%	
Gimlet Bits—Screw, \$7.50; no screw, \$9.	dis 20%	
Double Cut Gimlet Bits, Shepardson's.	dis 20%	
" Hartwell's.	dis 50%	
" Douglass.	dis 50%	
" Ives.	dis 20%	
Ladd's.	dis 20%	
Griswold's Patent.		
Moore's Ed Stock Drills.		
L'Hommedien's Ship Augers.		
Swan's Ship Augers.		
Vauhant's Post Hole.		
in. 32.00; yds. \$45 per dos.		
Avis and Tools.		
Aikens.		
No. 42 and 43.		
Clark's.		
Stanley's Excisor.		
" Axe.		
Wood's.	per doz \$12 @ 14 1/2 net	
Hunt's.	per doz \$12 @ 14 1/2 net	
Collins'.	per doz \$12 @ 14 1/2 net	
H. Clark's (J. C. W. & Co.) Bronzed.	per doz \$12 @ 14 1/2 net	
Hurd's.	per doz \$12 @ 14 1/2 net	
Summons'.	per doz \$12 @ 14 1/2 net	
Morris'.	per doz \$12 @ 14 1/2 net	
Hed. Jacker.	per doz \$12 @ 14 1/2 net	
Mount's.	per doz \$12 @ 14 1/2 net	
Donohue Bittet.	per doz \$12 @ 14 1/2 net	
Tuckerhill's.	per doz \$12 @ 14 1/2 net	
" Crown.	per doz \$12 @ 14 1/2 net	
John Leverett's.	per doz \$11 @ 12 50 net	
Ten Eyck.	per doz \$11 @ 12 50 net	
Balances.		
Hand.		
Bands.		
Pated.		
John Ford's (later list).		
Odeide.		
Bells.		
Hand, Light Brass.		
Extra Heavy.		
White Metal.		
Silver Chime.		
Sw. Chime.		
Globe.		
Gong.		
Abbae'.		
" Yankee.		
Barton's.		
Crank, Taylors'.		
" rock's.		
" Cone's.		
" Connel's.		
Lover, Sargent's.		
" Hart, Biven & Mead Mfg. Co.		
Pull.		
" Brook's.		
" Western.		
Cow—Common Wrought.		
Western.		
Star.		
Kentucky "star".		
" Sergeant's.		
Dodge's Genuine Kentucky.		
Yan's Genuine.		
Texas.		
Gal.		
Bellows.		
Blowers.		
Moulders.		
Lead Adjusters—Domestic.	\$10 doz \$2—dis 20%	
MacKrell's.		
" " ".		
Blocks.		
Taige, Rope and Iron Strapped, Providence		
Taige Co.'s list.		
Washburn's Patent.		
Merriman's.		
Billets.		
Boardman's Patent, 1/2 in. and larger.	\$12 50 c	
" 1/2 in.	42 c	
Buckles.		
Cast Iron.		
Cast Iron Chair.		
Wrought Iron BarreL.		
Square.		
" Snutter.		
Wrought Iron Flush Stanley's.		
" " " Sargent's.		
Carriage and Tire, Common.		
" " " Norw. Iron.		
Star, Philadelphia.		
Bridge Philadelphia.		
Carriage and Tire, K. B. & W.		
Flow, S. B. & W.		
Steel, R. B. & W.		
" Shultz Co. Shaved Heads.		
Union Nut Co. old list.		
" " " Stove.		
" " " Machine.		
Borax.		
Boring Machines.		
Bellows.		
Brass.		
Brass—self.		
Bright Ware Goods.		
Buit Rings.—Union Nut Co., new list.	dis 25%	
Sargent's.		
Buckles.		
Band hole Bories.		
Common and Ring.		
Ives' Job Bories.		
Enterprise Mfg. Co.		
Butcher Cleavers.		
Blades & Beckley Mfg. Co.		
" " ".		
Bratty's.		
2 3 4 5 6 7 8 9	\$19.00 \$21.00 \$22.00 \$27.00 \$30.00 \$33.50 \$36.00 \$40.00	
22.25 28.75 35.25 38.75 42.25 48.25 54.75 54.00		
Brass.		
Wrought Brass.		
Cast brass.		
Cast & cast Joint, Narrow.	dis 21%	
" Broad.	dis 20%	
Cast Long Joint, Narrow.	dis 19.50	
" " " Mayer.	dis 19.50	
" " " Parliament.	dis 20%	
Drilled Wire Jointed.		
Fast Joint, Narrow, High List.	dis 53.50	
" Broad.	dis 50.50	
Loose Joint, Narrow and Broad.	dis 60.50	
Wrought Broad.	dis 55.50	
Loose joint.	dis 55.50	
Wrought Table and Back Flaps.	dis 33.50	
Lull & Porter's Blind Butts.	dis 10.50	
Painter Blind Butts.	dis 38.50	
Nicholson Blind Butts.	dis 40.50	
Prater's Blind Butts.	dis 55.50	
Hunter's Blind Butts.	dis 48.50	
Clark's Surface Blind Hinges, Nos. 1, 2 and 5.	dis 50.50	
" " ".	dis 50.50	
Mortise.	dis 52.50	
Sargent's.		
Cartouche.	No. 1, dis 5.60; No. 2 and 3, dis 5.85;	
The American Spiral Spring Built Co.	Standard.	
Standard.	dis 5.85	
Per percussion, per lbs.		
G. D.	37 @ 40c	
E. V. B.	1-48. 58c; 1-10c. gold	
Double Waterroot.	1-48. 58c; 1-10c. 1-20c. gold	
Colt's.	1-10c. gold	
Augers and Bits.		
Douglas.		
Ives.		
Bachert French, Swift & Co.	1st quality.	
	dis 40%	
	2d quality.	dis 40%
Andrews' Bits.		
" Augers.		
Expansive Bits, Clark's.	\$15 (\$25) dis 15%	
" Ives.	\$20 (\$30) dis 20%	
" Blake's.	\$21 (\$35) dis 20%	
Hollow Augers, Douglas'.	\$26 (\$35) dis 25%	
" " ".	\$26 (\$35) dis 25%	
French, Swift & Co.	\$26 (\$35) dis 25%	
" Bonney's Adjustable.	\$26 (\$35) dis 25%	
" Ives' Expansive.	each \$4.50 - dis 40%	
" Cushman's Expansive.	dis 20%	
Gimlet Bits—Screw, \$7.50; no screw, \$9.	dis 20%	
Double Cut Gimlet Bits, Shepardson's.	dis 20%	
" Hartwell's.	dis 50%	
" Douglass.	dis 50%	
" Ives.	dis 20%	
Ladd's.	dis 20%	
Griswold's Patent.		
Moore's Ed Stock Drills.		
L'Hommedien's Ship Augers.		
Swan's Ship Augers.		
Vauhant's Post Hole.		
in. 32.00; yds. \$45 per dos.		
Avis and Tools.		
Aikens.		
No. 42 and 43.		
Clark's.		
Stanley's Excisor.		
" Axe.		
Wood's.	per doz \$12 @ 14 1/2 net	
Hunt's.	per doz \$12 @ 14 1/2 net	
Collins'.	per doz \$12 @ 14 1/2 net	
H. Clark's (J. C. W. & Co.) Bronzed.	per doz \$12 @ 14 1/2 net	
Hurd's.	per doz \$12 @ 14 1/2 net	
Summons'.	per doz \$12 @ 14 1/2 net	
Morris'.	per doz \$12 @ 14 1/2 net	
Hed. Jacker.	per doz \$12 @ 14 1/2 net	
Mount's.	per doz \$12 @ 14 1/2 net	
Donohue Bittet.	per doz \$12 @ 14 1/2 net	
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PENNSYLVANIA FILE WORKS.

Mill Saw File, Fine Bastard.



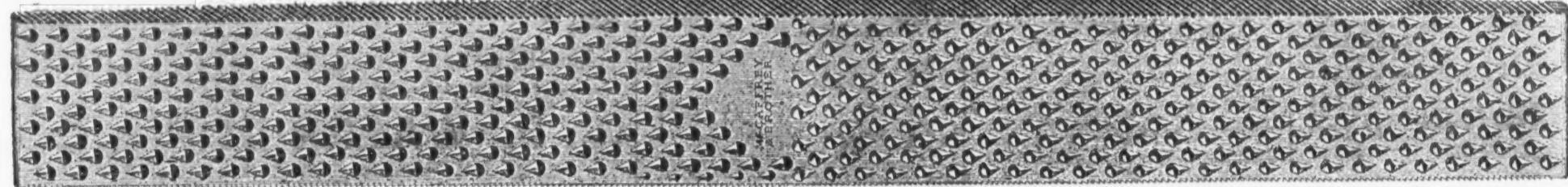
THE BEST FILE AND RASP IN THE MARKET.



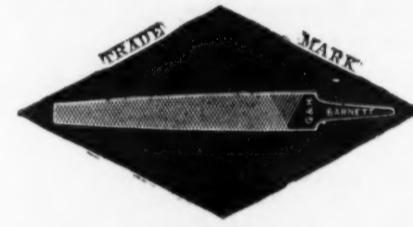
McCAFFREY & BROTHER,
Manufacturers of First Quality Hand-Cut FILES and RASPS only.

Nos. 1732, 1734 and 1736 North Fourth Street, PHILADELPHIA, Pa.

Double Horse Rasp.



SEND FOR ILLUSTRATED



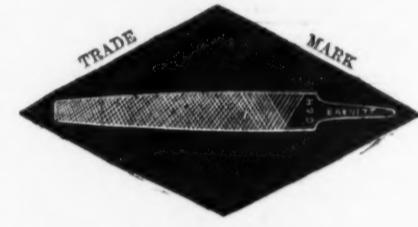
PRICE LIST.

BLACK DIAMOND FILE WORKS.

G. & H. BARNETT,
39, 41 & 43 Richmond Street, PHILADELPHIA.
LINFORTH, KELLOGG & CO.,

Sole Agents for the Pacific Coast, 3 and 5 Front Street, San Francisco, Cal.

SEND FOR ILLUSTRATED

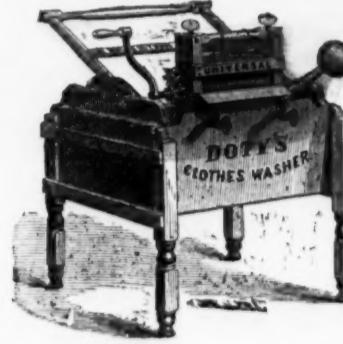


PRICE LIST.

Universal Wringer. Doty's Washer.



PRICE LIST ADOPTED JAN. 13, 1875.



FAMILY SIZES.	Size of Roll.		Retail Prices.	Wholesale Prices.
	Length.	Diameter.		
No. 2, "XX" Family Size, Cogs on both ends.	10 in.	1½ in.	\$8.00	\$61.00
" 2, Extra " "	10 in.	1½ in.	8.00	64.00
" 1½, "XX" Large Size, Cogs on both ends.	11 in.	1½ in.	9.00	72.00
" 1½, Extra, "	11 in.	1½ in.	9.00	72.00
<hr/>				
HOTEL SIZES.				
No. 1, (Usual) " "	12 in.	1½ in.	12.00	96.00
" 8, (Large) " "	14 in.	2½ in.	16.00	144.00

DOTY'S WASHER.

Family Size	Retail.	1 doz, or less. Each.
Hotel " "	\$14.00	\$9.80
	16.00	11.00

METROPOLITAN WASHING MACHINE COMPANY,
R. C. BROWNING, President, 32 Cortlandt St., N. Y.



E. HARRINGTON & SON,

Manufacturers of

ENGINE LATHEs,

From twelve (12) to forty-eight (48) inches swing;
Hand Lathes; Wood Turning Lathes; Vertical
Drills; Boring Mills; Tapping and Centering
Machines; Screw Presses for Mandrels;
Grindstone Boxes.

Cor. N. 15 St. & Pennsylvania Ave., Phila.

H. HAMMOND,
Manufacturer ofCAST STEEL HAMMERS,
Gun, Machine & Hardware, Drop Forgings,
Hartford, Conn.

JULIEN CHURN

AND
Butter Worker.

Hardware and Agricultural
Implement dealers are offered
in the above an article that is
now a staple in the trade, having
been sold the past eight years
from the Atlantic to the Pacific.
It is correct in principle, and
manufactured in the
most substantial and
handsome manner.

Send for a Descriptive
Circular.

Wholesale Agents:
H. B. GRIFFING, Corliss St., N. Y.
WOODFORD & CHAMBERLAIN, Cleveland, O.
WILLIAM BLAIR & CO., Chicago, Ill.
JOHN NAZIER & CO., Milwaukee, Wis.
MOODY WOOTTON & CO., Louisville, Ky.
SEMPLE, BIRGE & CO., St. Louis, Mo.
W. C. CHAMBERLAIN, Dubuque, Iowa.
BATTELL & COLLINS, Quincy, Ill.
BAKER & HAMILTON, San Francisco, Cal.

METROPOLITAN PLATING WORKS.
Every description of
Nickel, Gold & Silver Plating.
By a Superior Process. Finish & Color Warranted.
10 & 12 Rende Street, (Second Floor.)
Corner Elm, NEW YORK.

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FOR SECURING INVENTIONS, TRADE
MARKS, &c., IN AMERICA
AND EUROPE.
No. 258 Broadway, New York.
A. V. BRIESEN.

Knowles Patent Steam Pumps

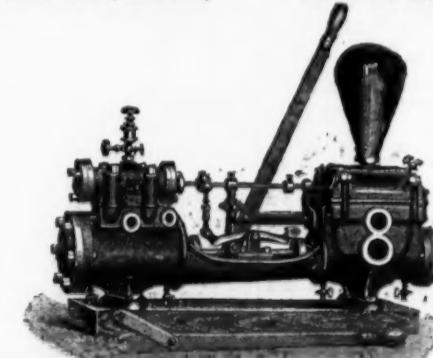
MANUFACTURED BY THE

KNOWLES STEAM PUMP WORKS,
WARREN, MASS.

WAREHOUSES:

14 & 16 Federal Street, Boston,

92 & 94 Liberty Street, N. Y.

Cut above represents regular Boiler Feed Pump, No. 3 and 4. Showing New Patent Valve Motion, and
Hand Power LEVER Attached and Detached.

FIRE PUMPS, a specialty.

Mining Pumps (both Double Acting Plunger, and Piston Pattern,) which we guarantee to run absolutely noiseless on any lift from 100 to 600 ft., at a single lift, a specialty. Pumps for every possible duty. Prices as low as any, and our workmanship and material altogether the Best.

Every machine furnished under a complete guarantee.

REG.

FACT.

THE

BE

THE CHERRY-HEAT WELDING COMPOUND.



Silver Medal of the American Institute.



Awarded November 21st, 1874.

Its Utility in Welding Iron and Steel.

The subscriber in bringing the CHERRY-HEAT WELDING COMPOUND to the notice of the iron trades, offers an article which is not only cheaper than any flux or welding compound hitherto employed in welding irons and steels, but which accomplishes with rapidity and certainty results never before attempted, and hitherto regarded as impossible of accomplishment. It is of indispensable utility in all establishments where iron and steel are forged, whether on a large or small scale. It perfectly unites IRON to IRON, IRON to STEEL, STEEL to STEEL, WROUGHT IRON or STEEL to CAST IRON, and IRON or STEEL to BESSEMER METAL, without requiring the parts welded to be brought above a CHERRY RED HEAT, and effecting a great saving in fuel over all other welding compounds or fluxes, which require the metals to be brought to a white heat. In its operation it is wholly unlike borax, and those who have used it, or witnessed experiments with it, pronounce it the most remarkable welding flux ever discovered.

Its Utility in Improving the Quality and Temper of Steel and in Restoring Burnt Steel.

The CHERRY-HEAT WELDING COMPOUND is of great value in improving the quality and temper of steel. A bar of common steel, a tool spring or blade, heated to redness, sprinkled with the CHERRY-HEAT WELDING COMPOUND, and then brought to a white heat, will take and retain a high temper with or without subsequent hammering. Steel injured by overheating, whether it has merely lost its tempering qualities or been burned to a cinder, is at once restored to its original homogeneousness and quality by sprinkling it with the CHERRY-HEAT WELDING COMPOUND, bringing it to a white heat, and hammering it into the required shape.

Its Utility in Improving the Quality and Fluidity of Cast Iron.

When mixed with cast iron in the ladle, in the proportion of five ounces of the CHERRY-HEAT WELDING COMPOUND to one hundred pounds of iron, castings can be made from common mixed scrap (No. 3) which equal in smoothness and finish castings made from the best grades of Scotch pig, and in strength and toughness castings made from a good quality of cold blast charcoal iron. Samples broken from two castings made from No. 3 scrap, tested by Prof. R. H. Thurston, at the Mechanical Laboratory of the Stevens Institute of Technology, Hoboken, N. J., were found to have an ultimate strength of 34,800 and 34,500 pounds to the square inch, respectively. This gives the Cherry-Heat welding a great value for employment in all departments of foundry work, especially car wheel, stove and hollow ware manufacture.

The subscriber is well aware that testimonials attesting the value of any article, however worthless, can be obtained with little trouble from irresponsible persons, and that the public are often misled by such testimonials. He is confident, however, that no article not possessing great economic value ever received such hearty and unqualified commendation from gentlemen well known in the iron trades, as the CHERRY-HEAT WELDING COMPOUND. The following may be pronounced the most remarkable array of testimonials ever presented in support of an inventor's claims :

TESTIMONIALS.

OFFICE OF TERWILLIGER & CO.,
Patentees and Manufacturers of Welded Steel
and Iron Fire and Burglar Proof Safes,
DEPOT, 100 MAIDEN LANE,
NEW YORK, April 9th, 1874.

MR. H. SCHIERLOH, 24 Exchange Place, Jersey City : DEAR SIR—We take great pleasure in stating to you that we have thoroughly tried and tested your Welding Compound, and are frank to say that it is the best welding material we have ever used, and surpasses, in our opinion, all you have ever said of it by way of recommendation. Yours, respectfully,
TERWILLIGER & CO.

OFFICE OF BENJAMIN ATHA & CO.,
Manufacturers of Welded Steel,
on Passaic River, for East River Stream,
NEWARK, N. J., April 14th, 1874.

MR. H. SCHIERLOH, Jersey City, N. J. : DEAR SIR—We take pleasure in recommending your Cherry Heat Welding Compound to all persons engaged in the manufacture of welded iron and steel. We have given it a good trial, and find it equal to your recommendation in all respects. Respectfully, Grant Locomotive Works.
W. W. FAIRBANKS, Sup't.

OFFICE OF CYRUS CURRIER, 21 Railroad P't.,
Builder of Steam Engines, Foundries and Cylinder
Paper Machines, Sole Manufacturer of King-
land's Patent Bag Engine and Stuff Pump,
NEWARK, N. J., May 12th, 1874.

H. SCHIERLOH, Esq. : DEAR SIR—After having given your Welding Compound a thorough trial on all work where such an article would be of use in our shops, we take pleasure in giving our recommendation to the many others that you have received. In some cases, after making a weld, I have found the steel to be greatly improved by the use of your compound. Yours, truly,
CYRUS CURRIER.

PATERSON, June 18th, 1874.

Mr. H. SCHIERLOH : DEAR SIR—We have given your compound for welding steel, wrought iron, and cast iron, a trial, and find it equal to your recommendation in all respects. Respectfully, Grant Locomotive Works.
W. W. FAIRBANKS, Sup't.

OFFICE OF CYRUS CURRIER, 21 Railroad P't.,
Builder of Steam Engines, Foundries and Cylinder
Paper Machines, Sole Manufacturer of King-
land's Patent Bag Engine and Stuff Pump,
NEWARK, N. J., September 30th, 1874.

H. SCHIERLOH, Esq. : DEAR SIR—Sent you yesterday for express a short wrought iron knife laid with steel. We have a great many similar knives to make for paper mill work, and your compound just what is needed in making these long welds. Most of the knives we make are much longer than the one sent you. In addition to the welds being more perfect, our work is very materially facilitated by the use of your compound. Yours, respectfully,
CYRUS CURRIER.

No. 141 RAYMOND STREET,
BROOKLYN, N. Y., September 26th, 1874.

H. SCHIERLOH, Esq. : DEAR SIR—I find that rock drills and mill picks are welded with your "Cherry Heat Welding Compound," with less trouble and better effect, as regards quality, than if we had used borax. In fact, we have discarded borax entirely, finding your compound superior in welding either iron or steel. Yours, respectfully, S. S. POLLARD.

DELAWARE, LACKAWANNA & WESTERN
R. R. CO., Morris and E. G. SHOPS,
HOBOKEN, N. J., June 10th, 1874.

H. SCHIERLOH, Esq. : DEAR SIR—We have given your compound a thorough practical test in welding, and found it to be the best welding compound that I have ever used. Yours, truly, WM. H. LEWIS.

JAMES R. THOMPSON & CO.,
Jersey City Steel Works, Manufacturers of
Cast Steel of all Descriptions,
JERSEY CITY, May 21, 1874.

H. SCHIERLOH, Esq. : DEAR SIR—We have made several tests of your Welding Compound, and find it everything that is claimed for it, being superior to borax for welding purposes, and take great pleasure in recommending same to general use. Yours, respectfully, JAMES R. THOMPSON & CO.

OFFICE OF THE TRENTON VISE AND TOOL
WORKS, TRENTON, N. J., April 10th, 1874.

MR. H. SCHIERLOH, 24 Exchange Place, Jersey City, N. J. : DEAR SIR—I have tried your Welding Compound very thoroughly, and find it is all that you claim for it, and have no hesitancy in recommending it to all persons engaged in the manufacture of articles composed of welded steel and iron. Perfectly sound and good welds can be made at a "cherry heat," thus preserving the quality of the steel, and saving much time to the forger. From the experiments made in our works, I judge that there is a saving in quantity used over borax of about 32 per cent. Yours, respectfully,

J. HOWARD MURRAY, Sup't.

PHILLIPSBURG MANUFACTURING COMPANY,
Manufacturers of Dovetail Nail Builders of
Iron Boxes, Plaster and Roofing, New
York Office, 23 Day Street.

PHILLIPSBURG, N. J., June 24, 1874.
H. SCHIERLOH, Esq. : DEAR SIR—I have tried your Welding Compound with very gratifying results.

In action in aiding the welding operation between iron and steel surfaces is extraordinary, comparing it with any other material or compound I have previously used.

It cannot be called a simple substitute for borax, because its action seems to be different from that, or any of the ordinary fluxes used to protect highly-heated metallic surfaces during the welding process.

The low temperature at which it allows welds to be made being one of its most peculiar and valuable features I cheerfully recommend it for the object you claim. Yours, truly,

JAMES CHRISTIE, Sup't.

NEW YORK, June 10th, 1874.
Mr. H. SCHIERLOH : DEAR SIR—I take pleasure in stating that we have tried your welding compound, and say that it is the best welding material we have so far used.

S. V. CROLIUS,
Foreman Smith Shop,
DELAMATER IRON WORKS.

Navy Yard, NEW YORK, July 22, 1874.
Sir—We have obeyed your order of the 10th inst., relative to testing the merits of Mr. H. Schierloh's "Cherry Heat Welding Compound," and have the honor to report as follows:

For welding steel and iron it possesses great superiority over the ordinary method, in the fact that the union of the two metals can be perfected at a much lower heat, thus avoiding the danger or liability of burning and destroying

the steel, which is of frequent occurrence with the old method; again, as the welding can be accomplished at a much lower heat, there must necessarily be a considerable and valuable saving in time over the ordinary method of taking a welding heat. In welding iron to iron its importance is not so conspicuous.

The cost of the new compound, or flux, is some twenty-five per cent. cheaper than borax; which is commonly used for the purpose.

Respectfully submitted,

GEO. SEWELL, Chief Engineer, U. S. N.
W. L. HANSCOM, Naval Constructor, U. S. N.
DANIEL HERRICK, Foreman Shipsmith.
To Vice-Admiral S. C. Rowan, U. S. N., Commanding New York Station.
Vice-Admiral's Office, Navy Yard, N. Y. Approved July 23, 1874.
R. W. SHUFELDT, Captain Commanding.

BUSH HILL IRON WORKS,
PHILADELPHIA, August 19th, 1874.
H. SCHIERLOH, Esq. : * * * * * I have used your compound and find it to exceed anything ever used about the smithy shop.

ANTON GERBER,
Foreman Boiler and Smith Shop.
JAMES MOORE, per STINSON.

OFFICE OF THE CONTINENTAL WORKS,
GREENPOINT, N. Y., August 24th, 1874.

MR. H. SCHIERLOH, 24 Exchange Place, Jersey City, N. J. : DEAR SIR—As you desired, I have tried your compound for welding iron to steel, and find it excels anything I ever used for the purpose. AUGUST MCCLACHLAN, Foreman Continental Works, Greenpoint, N. Y.

OFFICE OF WILLIAM C. CLARY,
Practical Engineer and Machinist,
Foot of Essex St., and 78 & 80 Hudson St.,
JERSEY CITY, October 1st, 1874.

MR. H. SCHIERLOH : DEAR SIR—I have been using now your Cherry Heat Welding Compound in my shop for 3 months, and feel confident to say that it is the best for the purpose, and especially for rock drills, steel rods, and in fact for welding all kinds of steel. It has ever since enabled me to dispense entirely with the use of borax. Yours, truly,

WILLIAM C. CLARY.

NEW YORK, Jan. 22d, 1875.
MR. H. SCHIERLOH : DEAR SIR—After giving your Welding Compound the most severe and critical practical tests, I am thoroughly convinced that it has neither equal nor superior as a flux for welding steel tires. Truly yours,

J. L. H. MOSIER, Foreman Smith Shop.
BREWSTER & CO., Broadway and 47th St., N. Y.

Directions for Use.

In tests of the CHERRY-HEAT WELDING COMPOUND, which manufacturers in all branches of the iron trades are cordially invited to have made in their own workshops, and by their own mechanics, care should be taken that it is used as directed. The function of borax is merely to protect steel against burning while being brought to the white or welding heat; the CHERRY-HEAT WELDING COMPOUND enables the weld to be made at a bright cherry-red heat, at which temperature steel requires no protection against burning. When a higher temperature is required, and the CHERRY-HEAT WELDING COMPOUND is used as borax is commonly employed, steel of any quality can be brought to snowball heat without the least danger of injuring it. It is used as follows:

To Weld Wrought Iron, Cast Iron, or Cast, Blister and Bessemer Steel.—Dust or sprinkle a thin layer of the compound on one of the surfaces to be welded, and lay the other surface upon it, so that the compound shall be evenly distributed between them. The pieces to be welded are then placed in the fire in such a position that the compound, when fluxed by the action of the heat, shall not run out. When brought to a bright cherry-red they are taken out and hammered or rolled together. In welding iron to steel, or steel to steel, on an anvil, it is best to hold a flat hammer on the steel and strike very lightly at first, as nearly all steel is apt to jump at such a low heat, when any but a flat and even blow is struck. When the welding is done under a drop or steam hammer, there is no necessity for especial care, as such blows are always regular; but the first two or three need to be light. After that the metal may be drawn down or worked into any desired shape, without the least danger of starting the weld. In inserting steel into iron, as in the manufacture of axes, the steel may be put in cold after the iron has been opened and the cleft sprinkled with the compound. After the steel is inserted the seam should be closed up as tight as possible, and the article held in the fire until brought to a red heat, in such a position that the compound cannot readily run out when fused. The compound should be distributed as evenly as may be convenient, with the hand or with a dredging box.

To Improve the Quality and Temper of Steel.—Heat to a dull red, sprinkle with the compound, heat to bright cherry, sprinkle a second time, and raise to white heat. The tool or bar may then be tempered by sudden plunging into cold water without care.

To Restore Burnt Steel.—The method employed in restoring burnt steel is the same as described in the preceding paragraph, except that hammering is necessary to restore the homogeneousness of the metal.

To Improve and Strengthen Cast Iron.—Place the compound in the ladle in the proportions of about five ounces of the compound to one hundred pounds of iron, and run the iron in upon it. No stirring is necessary. When the ebullition ceases skim off the impurities, and pour as usual. The castings are invariably perfect and free from air bubbles. They may be chilled like car wheels.

To Improve Cast Steel.—Sprinkle the compound on the molten cast steel, in the crucible, in the proportion of four ounces to the hundred pounds of metal. When the ebullition ceases skim and pour. The advertiser will conduct at his own expense, at any time and place which may be mutually convenient, such tests as may be considered necessary to show the value of the CHERRY-HEAT WELDING COMPOUND for any of the uses above described. He also desires that all who are interested in the subject shall test it in their own way, and solicit no order until after a trial has been made and satisfaction given. In no shop in which it has been introduced has it been discarded, or borax and other welding fluxes substituted for it. In every blacksmith shop, forge and rolling-mill, where welds of iron, puddle, blister and cast steel, and Bessemer metal are made to themselves, to each other or to cast iron (something never before attempted or deemed possible), and in every foundry, machine shop and crucible steel works, THE CHERRY-HEAT WELDING COMPOUND will be found of immediate and permanent utility. Those who have been unsuccessful in their experiments with the CHERRY-HEAT WELDING COMPOUND, are requested to communicate with the subscriber, who will take pleasure in explaining its use. It cannot fail when used properly. It is manufactured under the inventor's personal supervision, and is sold and warranted genuine under the above trade mark, in 5, 10, 50, and 100 lb. packages. Price for 5 and 10 lb. packages, 30 cents per lb.; for 50 and 100 lb. packages, 25 cents per lb. Samples sent on order.

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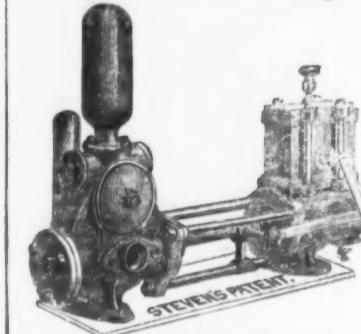
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This Drop (which has been illustrated in this journal) is of that class in which the Hammer is raised by a stiff belt or board passing up between two friction rolls, and is so well known that we will only describe our improvements. The patents we are working under are those of Bennett and Hotchkiss, and of Stiles and Goulding, and Goulding and Cheney was declared the first inventor) and N. C. Stiles. Our improvements consist:

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Second.—No dog is used on the upright to hold up the hammer, but a board is used, which has two clamps situated under the rolls, so arranged that as the hammer ascends they will freely open of themselves, but descending they will close and hold up the hammer. To let the hammer down the clamps are opened by pressing on the foot treadle.

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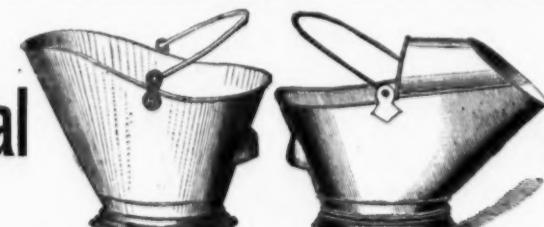
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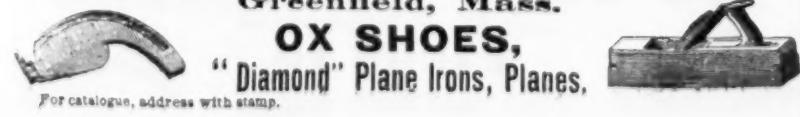
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Coopers' Rivets, from 1d to 8d, in sizes of 1/2, 3/4, 1, 1 1/2, 2, 2 1/2, 3, 3 1/2, 4, 4 1/2, 5, 5 1/2, 6, 6 1/2, 7, 7 1/2, 8, 8 1/2, 9, 9 1/2, 10, 10 1/2, 11, 11 1/2, 12, 12 1/2, 13, 13 1/2, 14, 14 1/2, 15, 15 1/2, 16, 16 1/2, 17, 17 1/2, 18, 18 1/2, 19, 19 1/2, 20, 20 1/2, 21, 21 1/2, 22, 22 1/2, 23, 23 1/2, 24, 24 1/2, 25, 25 1/2, 26, 26 1/2, 27, 27 1/2, 28, 28 1/2, 29, 29 1/2, 30, 30 1/2, 31, 31 1/2, 32, 32 1/2, 33, 33 1/2, 34, 34 1/2, 35, 35 1/2, 36, 36 1/2, 37, 37 1/2, 38, 38 1/2, 39, 39 1/2, 40, 40 1/2, 41, 41 1/2, 42, 42 1/2, 43, 43 1/2, 44, 44 1/2, 45, 45 1/2, 46, 46 1/2, 47, 47 1/2, 48, 48 1/2, 49, 49 1/2, 50, 50 1/2, 51, 51 1/2, 52, 52 1/2, 53, 53 1/2, 54, 54 1/2, 55, 55 1/2, 56, 56 1/2, 57, 57 1/2, 58, 58 1/2, 59, 59 1/2, 60, 60 1/2, 61, 61 1/2, 62, 62 1/2, 63, 63 1/2, 64, 64 1/2, 65, 65 1/2, 66, 66 1/2, 67, 67 1/2, 68, 68 1/2, 69, 69 1/2, 70, 70 1/2, 71, 71 1/2, 72, 72 1/2, 73, 73 1/2, 74, 74 1/2, 75, 75 1/2, 76, 76 1/2, 77, 77 1/2, 78, 78 1/2, 79, 79 1/2, 80, 80 1/2, 81, 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Wickinson's.	11 cents currency
Eagle.	11 cents currency
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Skeleton.	6 20 net
Victor.	6 75 net
Domestic.	7 00 net
Reading.	7 00 net
Bay State Paring, Coring and Slicing.	12 00 net
" Peach Parers.	10 50 net
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Hunt's Light.	13 00 @ 12 50
Red Indian, all sizes.	12 50 @ 12 00
Red Cheroke, all sizes.	18 00 @ 12 50
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Augers and Auger Bits.—Pierce's Pat.

Twist Bits.	25 @ 30 5
Douglas' & Irons Bits.	30 10 5
Connexion Valley Auger Bits.	35 10 5
Cout's Bits.	40 10 5
Jennings' Bits.	10 5
Bates' Nut Augers.	30 8 5
Douglas' & Irons' Augers.	30 10 5
Watrous' Ship Augers.	10 10 5
Jonker's Pat. Hollow Augers.	25 5
Stearns' Patent Hollow Augers.	25 5
Balances.—Landers, Bracy & Clark's.	40 5
Chattillon's.	40 5
Morton's.	40 5
Common Spring with Hook.	W. doz \$1 35 @ 2 00
Bells.—Bevin Bros. Mfg. Co. Light Hand	bits...
bits...	60 10 5
Other makers light.	65 10 5
Swiss Pattern Hand Bells.	50 5
Connel's Door Bell's.	50 10 5
Great Western and Kentucky Cow.	50 10 5
Boring Machines.—Bates' Mfg. Co., complete with augers.	15 @ 30 5
Douglas Mfg. Co., complete with augers.	15 @ 30 5
Common Boring Machines, no Augers.	44 25 @ 4 00
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Bolts.—Eastern Carriage Bolts.	special prices
Western.	" "
Philadelphia Tool Co.'s Pat. Duplex.	" "
Eagle (Coleman's).	60 5
Wrought Snuffer.	60 5
Braces.—Barber's.	10 40 5
Braces.	10 40 5
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Cast Fast Joint.	" "
Narrow.	" "
Reversible.	" "
Parker's Blind Butts.	10 40 5
Shepard's.	Discount 50 & 10 % by the case
Lath & Porter's.	50 & 10 5
Cherrytree Blind Butts.	60 5
Garrison.	" "
Clark's Mortise Blind Hinges.	40 20 5
Chains.—German Chain.	Coll.
Galvanized Pump.	" "
test Proof Coil Chain.	W. doz 10 5
W. doz 10 5	10 5
5 16 5	5 16 5
5 16 5	5 16 5
By the case, 500 lbs, discount 50 % per lb. Common Chain, 10 per lb. less than proof.	5 16 5
Chains.—Welded Framing.	60 10 5
Locks, Firmer.	60 10 5
Tang.	40 10 5
Beats' Framing and Firmer.	2 1 2
Cabinet Glass Wheel.	40 10 5
Iron and Brass Wheels.	10 10 5
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Clothes Wringers.—Universal.	doz 64 00
Novelties.	60
Doors on Dovetailed.	2 1 2
Coffee Mills.—common Box and Side.	15 5
Paten Boxes and Side.	15 5
Cutter.—Fancy, best.	15 5
Lath & F. Clark, J. R. & Co. and Samson & Goodnow Mfg. Co. Manufacturers' net prices.	15 5
Drawing Knives.—Hart Mfg. Co. a.	doz 60 @ 60 10 5
Concave Adjustable Handle.	10 10 5
Drawers.	10 10 5
Fry Pans.	Dined...
W. doz 4 50	4 50
10 0	1 5
2 5	4
Survived.	5 0
W. doz 1 50	1 50
0 0	1 5
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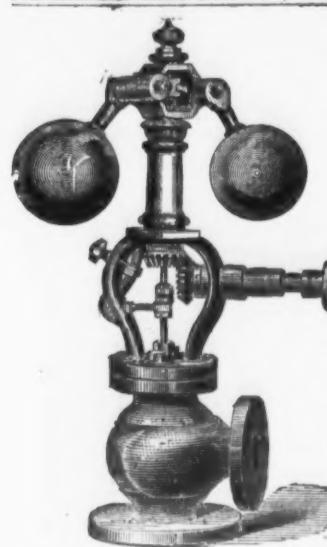
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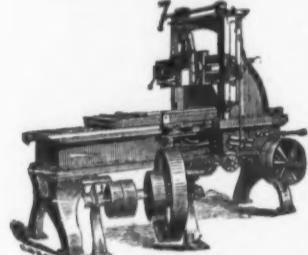
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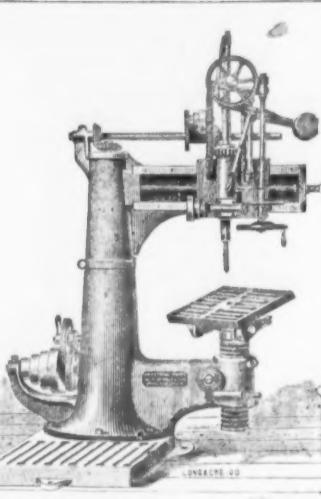
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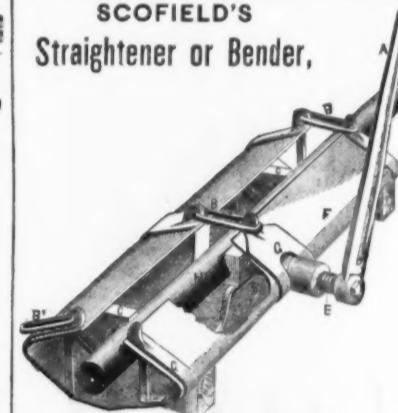
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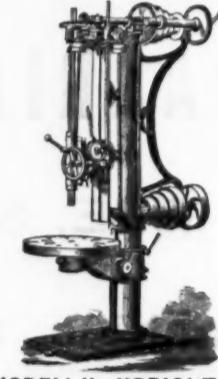
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